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MEDICO-CHIRURGICAL TRANSACTIONS,

PUBLISHED BY THE

ROYAL

MEDICAL AND CHIRURGICAL SOCIETY

OF

LONDON.

VOLUME THE NINETEENTH.



LONDON:

PRINTED FOR LONGMAN, REES, ORME, BROWN, GREEN,
AND LONGMAN, PATERNOSTER ROW.

1835.

G. WOODFALL, ANGEL COURT, SKINNER STREET, LONDON.

MEDICO-CHIRURGICAL TRANSACTIONS,

PUBLISHED BY THE

ROYAL
MEDICAL AND CHIRURGICAL SOCIETY

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LONDON.

SECOND SERIES.

VOLUME THE FIRST.



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G. WOODFALL, ANGEL COURT, SKINNER STREET, LONDON.

ADVERTISEMENT.

SINCE the publication of the first part of the Eighteenth Volume of the Medico-Chirurgical Transactions, the Society has received the honor of His Majesty's Royal Charter of Incorporation, constituting the Society the Royal Medical and Chirurgical Society of London; designating His Majesty as the Patron of the Society; and creating its members, Fellows of the Chartered Body.

In consequence of this important event, the President and Council have deemed it advisable, to terminate the Eighteenth Volume with the Papers already printed in the first Part of it; and to commence the Society's publications, under the Charter, with the Nineteenth Volume. Directions have therefore been given to complete the Eighteenth Volume by an Index, which will be delivered at the Publishers', free of expense.

The President and Council, having thought it desirable that the Charter and Bye-Laws of the Society, and the papers connected therewith, should be put on record in the first Volume of the Society's Transactions published after its incorporation, have accordingly inserted them as an introduction to the present Volume, together with a list of the Subscriptions, which have enabled the Society to defray the expenses of the Charter, without trenching on its ordinary funds.

House of the Royal Medical and Chirurgical Society,
53, Berners Street.
1835.

THE FOLLOWING PETITION to HIS MAJESTY, received the unanimous sanction of the MEMBERS of the MEDICAL and CHIRURGICAL SOCIETY, at a special general Meeting of the SOCIETY held on the 7th day of May, 1834.

TO THE KING'S MOST EXCELLENT MAJESTY;

The humble Petition of JOHN ELLIOTSON, Doctor of Physic, SIR ASTLEY PASTON COOPER, Baronet, and JOHN YELLOLY, Doctor of Physic,—

Sheweth,

That a Society was formed in the year 1805, by a considerable number of Physicians and Surgeons of eminence in London, for the improvement of their Profession, of which the two last-named of Your Petitioners were original Members, and that this Society expended considerable sums of money in the purchase and collection of a large and valuable Library, and published eighteen Volumes of Transactions, selected from the Papers read at Meetings of the said Society, which have had a very extensive circulation.

Your Petitioners, therefore, being convinced that the sanction of Your Majesty's Royal Charter of Incorporation, would materially contribute to the stability and

efficiency of this Society, humbly beseech Your Majesty, to grant to Your Petitioners, and such other persons as are, or may be elected Members of the said Society, Your Majesty's Royal Charter of Incorporation, that they and their successors may henceforth be one body politic and corporate, by the name of the ROYAL MEDICAL AND CHIRURGICAL SOCIETY OF LONDON; with such Rights Powers, Privileges, Franchises, and Immunities, as are expressed in the Draft of the proposed Charter hereunto annexed; and that Your Majesty will be pleased to constitute Your Majesty, and Your Royal Successors, Patrons of that Society.

And Your Petitioners, as in duty bound, will ever pray, &c.

Signed,

JOHN ELLIOTSON.

ASTLEY PASTON COOPER.

JOHN YELLOLY.

LONDON, MAY 7TH, 1834.

In consequence of the above Petition, his Majesty was graciously pleased, with the advice and consent of His Majesty's most Honourable Privy Council, and under the sanction of the law officers of the Crown, to grant to the SOCIETY, on the 30th of September following, His Royal Charter of Incorporation, of which the following is a copy, on the terms of the draft submitted to His Majesty's consideration.

CHARTER.

WILLIAM THE FOURTH, by the Grace of GOD of the United Kingdom of Great Britain and Ireland King, Defender of the Faith—To ALL to whom these presents shall come GREETING :

WHEREAS JOHN ELLIOTSON, Doctor of Physic, Sir ASTLEY PASTON COOPER, Baronet, and JOHN YELLOLY, Doctor of Physic, have, by their petition, humbly represented unto us, that a Society was formed in the year one thousand eight hundred and five, by a considerable number of Physicians and Surgeons of eminence in London, for the cultivation and promotion of Physic and Surgery, and of the branches of Science connected with them, of which the last two named of the petitioners were original Members ; and that the said Society has expended considerable sums of money in the purchase and collection of a large and valuable Library, and has published eighteen volumes of Transactions, which have had a very extensive circulation. AND WHEREAS they the said petitioners have humbly besought us, that we should give to them, and to the other persons who have already become Members of the said Society, or who may at any time hereafter become Members, our Royal Charter of Incorporation, for imparting greater stability and effect to the designs of the said Society. NOW KNOW YE, that we, being desirous of encouraging a design so laudable, have, of our special grace, certain knowledge, and mere motion, willed, granted, and ordained, and Do by these presents, for us, our heirs and successors, will, grant, and ordain, that the said JOHN ELLIOTSON, Sir ASTLEY PASTON COOPER, and JOHN YELLOLY, and such others of our loving subjects as are

Petition for
a Charter,

and grant of
it to the
petitioners
and to the
present
Members
and those
who shall be
elected ac-
cording to
future bye-
laws.

now Members of the said Society, or who shall at any time hereafter become Members thereof, according to such bye-laws as shall hereafter be framed or enacted, shall by virtue of these presents be called Fellows of the said Society, and shall be one body politic and corporate, by the name of *The Royal Medical and Chirurgical Society of London*; of which Society we do hereby declare ourselves, and successors if they shall think fit, the Patron; by which name they shall have perpetual succession, and a common seal, with full power to alter, vary, break, and renew the same at their discretion; and by the same name to sue and be sued, to implead and be impleaded, to answer and be answered unto, in every court of us, our heirs and successors; and be for ever able and capable in the law, to purchase, receive, hold, possess and enjoy, to them and their successors, any goods and chattels whatsoever; and also be able and capable in the law (notwithstanding the Statutes of mortmain) to take, purchase, hold, and enjoy, to them and their successors, any lands, tenements or hereditaments whatsoever, the yearly value of which shall not exceed in the whole the sum of two thousand pounds, computing the same respectively at the rack rent, which might have been had or gotten for the same respectively, at the time of the purchase or acquisition thereof; and shall have full power and authority to sell, alien, charge, or otherwise dispose of, any real or personal property so to be by them acquired as aforesaid; and to act and do in all things relating to the said corporation, in as ample manner and form, as any other our liege subjects, being persons able and capable in the law, or any other body politic and corporate in our said United Kingdom of Great Britain, may or can act or do.

Appoint-
ment of the
first Presi-
dent, and
first two
Members of
Council,
who are to
be joined,

AND WE DO further declare and grant, that for the better government of the said Society, and for the better management of the concerns thereof, there shall be, from the date of these presents thenceforth and for ever, a President of the said Society, who, with twenty Fellows to be elected in manner hereinafter mentioned, shall form the Council. And

we do hereby appoint the said JOHN ELLIOTSON, the first President of the said Society, and the said Sir ASTLEY PASTON COOPER, and JOHN YELLOLY, the first Members of the Council, to continue in office till the first day of March next. AND WE FURTHER DIRECT that within four months from the date of these Letters Patent, a General Meeting of the Fellows of the said Society shall be held, who shall be authorized, by method of ballot, to elect eighteen fit and proper persons as officers and other members of the Council, to complete the number of twenty-one, of whom, including the President, WE have willed that the Council shall be composed; and that such additional persons shall likewise continue in office till the first day of March next, and till other fit and proper persons be chosen in their room.

within four months, by eighteen other Members of Council appointed at a General Meeting; and all to remain in office till the 1st of March.

AND our further will and pleasure is, that the Fellows of the said Society shall and may, on the first day of March one thousand eight hundred and thirty-five, and also shall and may, on the first day of March in every succeeding year, or as near the same as conveniently may be, assemble together at the then last, or other usual place of meeting of the said Society, and proceed, by method of ballot, to nominate and appoint a President of the said Society, and such officers and other members of the Council as may, with the President, form the number of twenty-one, of whom we have willed that the Council shall consist; and also may in case of the death, resignation, or removal of the President, or any officer or other member of the Council, within the space of three months next after such death, resignation, or removal, elect some other person, being a Fellow of the said Society, to supply the place of such President, or officer, or other member of the Council. And our further will and pleasure is, that no Fellow who has filled the office of President for two successive years, shall be again eligible to the same situation, until the expiration of one year from the termination of his office; and that not more than two-thirds of the Fellows who have formed the Council of the preceding year, shall be re-elected Members of the Council at such annual

The Society to appoint twenty-one officers and other Members of Council on the 1st of March in every year;

to fill up vacancies that may occur in the intervals;

not to appoint the same President for more than two successive years; nor ever elect more than two-thirds of the

members of the last Council; to have the power of electing new Fellows, and expelling Fellows. The Council to have the power of making Bye Laws,

for regulating the affairs of the Society, the description and number of its officers, elections and expulsions, appointment of subordinate officers, filling up vacancies,

determining the qualifications of candidates, the amount of entrance and subscription money, and the qualifications of honorary Fellows; and to have the power of altering and revoking such Bye Laws as may be made,—

meeting. And we do further grant and declare, that the Fellows of the said Society, or any ten or more of them, shall and may have power, from time to time, at the meetings of the said Society, to be held at the usual place of meeting of the said Society, or at such place as shall have in that behalf been appointed, by and with the consent of not less than four-fifths of the Fellows present, to elect such persons to be Fellows of the said Society, and all Fellows to remove from the said Society, as they shall think fit; and that the Council hereby directed to be appointed, and the Council of the said Society for the time being, or any three or more of them, all the members thereof having been first duly summoned to attend the meetings thereof, shall and may have power, according to the best of their judgment and discretion, to make and establish such Bye Laws, as they shall deem proper and necessary for regulating the affairs of the said Society; and also the number and description of its officers; and also the times, place and manner of electing and removing the Fellows of the said Society, and all such subordinate servants, officers and attendants as shall be deemed necessary or useful for the said Society; and also for filling up, from time to time, any vacancies which may happen by death, resignation, removal, or otherwise, in any of the offices or appointments constituted or established for the execution of the business and concerns of the said Society; and for regulating and ascertaining the qualifications of persons to become Fellows of the said Society respectively; and also the sum and sums of money to be paid by them respectively, or any of them, whether upon admission or otherwise, towards carrying on the purposes of the said Society; and also the number, qualifications, and privileges, of such persons as they may from time to time deem it proper to admit as Honorary Fellows; and such Bye Laws from time to time to vary, alter, or revoke, and make such new and other Bye Laws, as they shall think most useful and expedient, so that the same be not repugnant to these presents, or to the laws of this our

Realm : PROVIDED, that no Bye Law hereafter to be made, or alteration or repeal of any Bye Law which shall hereafter have been established by the said Council hereby directed to be appointed, shall be considered to have passed, and be binding on the said Society, until such Bye Laws, or such alteration or repeal of any Bye Laws, shall, after such notice to the Fellows as from time to time may be deemed expedient by the said Society, have been confirmed by ballot by the members at large of the said Society, ten at least of the Fellows of the said Society being present : and Provided that no such Bye Law, or alteration or repeal of any Bye Law, shall be deemed or taken to pass in the affirmative, unless it shall appear upon such ballot, that not less than two-thirds of the Fellows present at such meeting, shall have voted for the same. And Our further will and pleasure is, that it shall be lawful for any three Fellows, by writing under their hands, transmitted to the President, or such other officer or officers as may by the Bye Laws hereafter to be made, be designated for the purpose, to recommend to the Council, any new Bye Laws, or alteration or repeal of any existing Bye Laws ; and in case the Council shall not agree to such new Bye Laws, or alteration or repeal of any existing Bye Laws, then our will and pleasure is, that such propositions shall, if required by the said three Fellows, be submitted to the consideration of the Society at large, and determined on by them, in the same way as has been directed with regard to new Bye Laws, or alterations or repeals of existing Bye Laws which have been approved by the Council. IN WITNESS whereof, we have caused these our Letters to be made Patent. WITNESS Ourself, at Our Palace at Westminster, this thirtieth day of September, in the fifth year of Our reign.

Provided the Society sanction the proceeding of the Council.

Any three Fellows may make recommendations respecting Bye Laws to the Council ;

or to the Society, if the Council dissent from the recommendation.

BY WRIT OF PRIVY SEAL.

EDMUNDS.

ON the 10th of November, the Charter was laid before a Special Meeting of the Society, and the following Resolutions unanimously adopted ; namely,

That a humble and dutiful Address be presented to His Majesty, praying that His Majesty would be pleased to accept the most respectful and grateful acknowledgements of the President and Fellows of the Royal Medical and Chirurgical Society, for His Majesty's great kindness in granting to them His Royal Charter of incorporation ; and in particular for His Majesty's gracious condescension in becoming the Patron of this Society : and that such Address be drawn up by the President and Council, and presented to his Majesty by the PRESIDENT, SIR ASTLEY COOPER, and DR. YELLOLY.

On the 18th of February following, the Common Seal of the Society was put to the following ADDRESS to his Majesty.

TO THE KING'S MOST EXCELLENT MAJESTY ;

WE, YOUR MAJESTY's most loyal and dutiful Subjects, the President and Fellows of the ROYAL MEDICAL AND CHIRURGICAL SOCIETY OF LONDON, beg leave to offer to Your Majesty, our most grateful acknowledgements, for the high honor which Your Majesty has been pleased to confer on us, by granting to us Your Majesty's Royal Charter of Incorporation ; and for Your Majesty's gracious condescension, in becoming the Patron of our Society.

It has been our earnest endeavour, during a long series of years, to support, in our publications, and our meetings, that character for liberal and useful acquirements, which the Medical Profession has always possessed in Your Majesty's Dominions.

In the Sanction and Encouragement which Your Majesty has been graciously pleased to give to our exertions, we view the means of augmented stability and usefulness; and we venture humbly to assure Your Majesty, that as the best mode of evincing our grateful sense of Your Majesty's Favor and Protection, we shall at all times continue to keep steadily before us, as objects of manly and honorable emulation, the successful efforts of the great Scientific Bodies of the Country, which, under the fostering and invigorating influence of Your Majesty, and Your Illustrious Predecessors, have so largely contributed to render Your Majesty's Kingdom pre-eminently distinguished in every department of Human Knowledge.

That Your Majesty may long live in the Affections of Your Subjects, the Indulgent Promoter of whatever is conducive to their Welfare and Happiness, and the Benignant Encourager of every worthy exertion, is our ardent and anxious wish.

Sealed with the common seal of the Society, and signed by the authority of a General Meeting of its Fellows, on the eighteenth day of February, 1835.

JOHN ELLIOTSON.

ASTLEY PASTON COOPER.

JOHN YELLOLY.

The above Address was presented to His Majesty at the Levee at St. James's, on Wednesday, March 4th, by Dr. Elliotson, Sir Benjamin Collins Brodie*, and Dr. Yelloly; and His Majesty was pleased, on the Monday following, to insert his Sign Manual in the Obligation-book of the Society, as Patron.

Soon after the granting of the Charter, namely, on the 24th of November, 1834, the number of the Council, in consequence of a clause in the Charter to that effect, was completed to twenty-one, by the addition of eighteen Fellows elected by ballot from the Society at large, to the three Fellows who were the grantees of the Charter; and on the 14th of the subsequent February, the following were enacted as the Bye Laws of the Society, pursuant to the authority of the Charter, on the Basis of the Statutes of the original Society.

* Sir Astley Cooper was prevented attending the Levee by indisposition, and Sir Benjamin Brodie supplied his place.

BYE - LAWS.

CHAPTER I.

Of the Object and Constitution of the Society.

I.—THE ROYAL MEDICAL AND CHIRURGICAL SOCIETY is instituted for the cultivation and promotion of Medicine and Surgery, and the branches of Science connected therewith.

II.—The Society shall consist of Fellows, and Honorary Fellows. The Fellows shall be unlimited in number; the Honorary Fellows shall not exceed twelve British subjects, and twenty Foreigners.

III.—Such of the Fellows as reside within seven miles of the Metropolis, shall be considered as Resident Fellows; all the others as Non-resident.

IV.—The Fellows of the Society shall consist of Physicians, Surgeons, and General Practitioners; but the number of Resident Fellows, who are General Practitioners, shall not exceed one-third of the total number of Resident Fellows.

V.—British subjects who have eminently distinguished themselves in Medicine, Surgery, or in Sciences connected with them, but who are not of the medical profession, or do not practise therein, shall be eligible as Honorary Fellows.

VI.—Foreigners who have eminently distinguished themselves in Medicine, Surgery, or in Sciences connected therewith, shall be eligible as Honorary Fellows.

VII.—The Officers of the Society shall be elected from the Fellows, and shall consist of a President, four Vice-Presidents, two Treasurers, two Secretaries, and two Librarians, who, together with as many other Fellows as

shall make up twenty-one, shall constitute the Council, and shall have the management of the Society's affairs.

CHAPTER II.

Of the Election and Admission of Fellows.

I.—EVERY Candidate for admission into the Society as a Fellow, shall be proposed and recommended by three or more Fellows, who shall deliver to one of the Secretaries, a paper, signed by themselves, specifying the Christian and Surname of such person, together with his rank in the profession, department of practice, and usual place of residence; all which shall be certified from their personal acquaintance with him. But, if such Candidate shall be a foreigner, and resident abroad, a certificate of personal knowledge from one Member is sufficient, provided two more shall certify from a knowledge of his works.

II.—Every Fellow who intends to propose any person to be a Fellow of the Society shall, before such person be proposed, make known to him the nature of the obligation to be subscribed on the event of his being elected; and also the sum which is to be paid as Admission Money, and the rate of annual payments for the use of the Society.

III.—Every recommendation shall be suspended in the common meeting room of the Society for three successive meetings, exclusive of that on which it was presented, and that on which the ballot for election shall take place; and no person shall be declared elected, unless he have in his favour four-fifths of the Fellows voting, ten at the least being present.

IV.—Every person elected a Fellow of the Society, shall, if he live within seven miles of the metropolis, have immediate notice of his election sent to him by one of the Secretaries, according to the form in No. I. of the Ap-

pendix; and shall appear for his admission, on or before the fourth ordinary meeting of the Society after his election, or within such further time as shall be granted by the Council, on special application to them for that purpose; otherwise his election shall be void.

V.—Such person shall, previously to his admission, subscribe the following obligation in the Obligation Book:—

“We, whose names are hereunto subscribed, having been elected Fellows of the Royal Medical and Chirurgical Society of London, hereby promise, that we will, to the utmost of our power, promote the honour and interest of the said Society, and observe the enactments of its Charter and Bye-laws. Provided that, whenever any of us shall signify to the President, in writing, that we desire to withdraw therefrom, we shall, after paying what may be due from us to the Society, and returning any Books which may be in our possession, be free from this Obligation for the future.”

If any person elected shall refuse to subscribe this Obligation, his election shall be void.

VI.—The admission of any Fellow into the Society, shall be at some meeting thereof, in manner and form following, he having first paid the admission fee, and subscribed the obligation; viz. being presented by some Fellow, the President, or Fellow officiating in his stead, shall address him in these words,—“By the authority, and in the name of the Royal Medical and Chirurgical Society of London, I admit you a Fellow thereof.”

VII.—Such persons as may be elected Fellows of the Society, and do not live within seven miles of the metropolis, shall have the notice, No. II. of the Appendix, transmitted to them by one of the Secretaries; and shall be considered Fellows, on paying the admission fee, and returning, with their Subscription annexed, the Obligation,

No. III. of the Appendix, a copy of which shall accompany the notice of their election.

VIII.—The election of every person into the Society, with the time thereof, shall be recorded in the Journal Book ; but if it appear upon the ballot that the person proposed is not admitted a Fellow, no notice shall be taken of this in the Minutes.

CHAPTER III.

Of the Election of Honorary Fellows.

I.—THE election of Honorary Fellows shall be conducted in the same manner as that of Fellows ; with the exception, that personal acquaintance shall not be necessary in recommending them.

II.—Honorary Fellows shall have the Diploma (No. IV. of the Appendix) transmitted to them ; and when present at a General Meeting of the Society shall sign the obligation, and be admitted with Formalities similar to those prescribed for the admission of Fellows.

III.—The Council shall have it in their power to recommend persons to the Society as Honorary Fellows.

CHAPTER IV.

Of the Withdrawing and Expulsion of Fellows.

I.—No Fellow shall be understood to have withdrawn himself from the Society, until he shall have paid whatever money may be due, have returned all books borrowed of the Society, and have signified his intention of resigning, by letter under his hand, addressed to the President ; and if such letter be not left at the House of the Society, previously to the annual general meeting, the contribution of such Member shall be understood to have become due at such annual general meeting.

II.—Whenever there shall appear cause, in the opinion of the Council, for the expulsion of any Fellow from the Society, a minute shall be made thereof, and shall, after having been suspended in the Society's room for at least fourteen days, be submitted to the consideration of the annual general, or a special general meeting of the Society; and being put to the ballot, and two-thirds of the Fellows present voting for it, ten at the least being present, the President, or Fellow presiding, shall declare the same accordingly.

CHAPTER V.

Of the Contributions of Fellows.

I.—EVERY Person elected a Fellow of the Society, shall, if he live in the metropolis, or within seven miles of it, previously to his admission, pay to the Society the sum of Six Guineas, as an Admission Fee; and shall also further contribute the sum of Three Guineas annually. (Fellows are requested to give a permanent order on their bankers or agents, to pay such contribution as it becomes due, from year to year, according to the form of the Appendix No. V.)

II.—All yearly contributions shall be considered payable at each annual general meeting, for the preceding year; but no Fellow elected within five months of the Anniversary meeting, shall be liable to annual contributions, till the second annual general meeting from the time of his election.

III.—Every Fellow who is more than six months in arrear, shall have his name suspended in the public meeting room, as being in arrear. If the arrear shall not be paid on or before the next annual general meeting, no satisfactory reason having been assigned to the President

and Council for such non-payment, they shall cease to be Fellows of the Society. Provided that on a solicitation for re-admission being addressed to the President and Council by an individual so circumstanced, within the space of three months following such annual general meeting, the case of the individual so soliciting, shall be stated by the President from the Chair at one of the ordinary general meetings of the Society, and the question of his re-admission decided by ballot, according to the majority of votes, at the next ordinary general meeting.

IV.—Gentlemen who have been elected Fellows of the Society, and do not live within seven miles of the metropolis, shall be considered Fellows, without the form of admission, on payment of the sum of Six Guineas, without further annual contribution.

V.—But should such Gentlemen ever reside in the metropolis, or within seven miles thereof, they shall subscribe the obligation, be admitted, and contribute the usual Annual Subscription like other Fellows.

VI.—Any resident Fellow of the Society, who may cease to live in London, or within seven miles of it, shall, from the anniversary meeting succeeding the commencement of his absence, be considered a non-resident Fellow, and freed from the payment of his annual contribution: and the same shall apply to any temporary absence, provided it include the whole period between one anniversary meeting and another.

CHAPTER VI.

Of the Election of Officers and Council.

I.—EVERY resident Fellow of the Society shall be summoned to the Annual Meeting, at least a week previous to the day on which it shall take place, by a letter signed by the President, and one of the Secretaries.

II.—The whole of the Members of the Council shall be elected annually by ballot; but no Fellow shall be eligible to the offices of President or Vice-President, for more than two years in succession.

III.—One-half of the Members of the Council, who are not Officers of the Society, shall go out in rotation annually, and be replaced by an equal number of other Members, chosen from the Society at large. But a Fellow who has thus quitted his seat in the Council, shall, nevertheless, retain his eligibility to any office in the Society.

IV.—Balloting lists, recommended by the Council, and having a blank space for such alterations as any Fellow may wish to make in them, shall be laid on the Society's table, for the use of the Fellows, four days previous to the day of election.

V.—The Chair shall be taken at the Annual Meeting, at such a time as shall be fixed upon by the Council, and have been previously inserted in the circular summons, and the ballot shall continue open for not less than one hour.

VI.—The President, or Fellow presiding in his stead, shall appoint, from the Fellows present, two or more scrutineers, to superintend the ballot in its progress; and when it is closed, to examine the lists, and report the result to the Meeting.

VII.—Each Fellow voting shall deliver his list, folded up, to the President, or Fellow presiding in his stead; and the name of each Fellow who shall so deliver in his list, shall be noted by one of the Secretaries.

VIII.—If any doubt or difficulty arise during an election, it shall be determined by the majority of the Council of the preceding year who may happen to be present.

IX.—If any Fellows have an equal number of suffrages

for an office, or place in the Council, the person to be elected shall be determined by lot.

X.—If a vacancy in the Council, or among the Officers of the Society, happen during the intervals of the annual elections, the Council shall have the power of appointing a special general meeting of the Society for the purpose of filling up such vacancy; and the summonses for such meeting, and the proceedings at it, shall, as far as circumstances will admit, be after the manner directed for the annual election.

CHAPTER VII.

Of the President and Vice-Presidents.

I.—THE business of the President shall be to preside at all the Meetings, and to regulate all the proceedings of the Society and Council; to state and put questions, both in the affirmative and negative, according to the sense and intention of the Meeting; to check irregularities, and to keep all persons in order; and to execute, and see to the execution of, the Provisions of the Charter and Bye-Laws of the Society. He shall, after the minutes of each Meeting are read over, with the approbation of the Meeting, sign the same, as a voucher for their accuracy.

II.—In the absence of the President, the Vice-Presidents in rotation; or, in their absence, one of the Treasurers, or a Fellow chosen by the Fellows present, shall take the Chair, and do every such business, as the President, when present, is empowered to do by the Charter and Bye-laws of the Society.

CHAPTER VIII.

Of the Treasurers.

I.—THE Treasurers, or some person appointed by them, shall receive, for the use of the Society, all sums of money

due or payable to the Society ; and, out of such money, shall pay and disburse all sums of money which may be due from, or payable by the Society ; and shall keep particular accounts of all such receipts and payments, in the way which may seem most proper to the Council.

II.—Every sum of money payable on account of the Society, shall receive the sanction of the Council, previously to its being paid.

III.—All sums of money, in the hands of the Treasurers, which shall not be immediately required for the use of the Society, shall be laid out in such government, or other securities, as shall be approved of, and directed by the Council.

IV.—The Treasurers shall keep a book of printed check receipts for annual contributions ; each receipt shall be signed by one or both of them, and be filled up with the name of the Fellow paying, the sum paid, and the time paid to. These receipts shall be undersigned by the person who shall receive the money on the Treasurer's behalf, and who, upon the delivery of the receipt to the Fellow paying, shall enter upon that part of the check which is left in the book, the above particulars, and the day of payment.

V.—The accounts of the Treasurers shall be audited annually by a committee, consisting of five Members of the Council, (of whom the President or one of the Vice-Presidents, and one of the Secretaries, shall be two,) and of five Fellows of the Society, not Members of the Council, who shall be nominated by the President, with the consent of the major part of the Fellows present, given by ballot, if demanded, at any of the three meetings next preceding the annual general meeting ; and any three or more of the said committee shall be a quorum.

VI.—This Committee shall make their report, in writ-

ing, to the Society, upon the day of the said general meeting; and also to the Council, at the first meeting after such audit, stating not only the balance in the Treasurer's hands, but also the general state of the Funds of the Society.

CHAPTER IX.

Of the Secretaries.

I.—THE Secretaries shall have the superintendence of the resident officers and servants of the Society, and shall have the management of the correspondence of the Society and Council.

II.—The Secretaries shall attend all meetings of the Society, Council, and Committees; where, when the Chair has been taken, one of them shall read the minutes, orders and entries of the preceding meeting, and shall afterwards take minutes of the business and orders of the present meeting, in a rough minute book, to be afterwards entered in the proper book: and, at the meetings of the Society, the other shall mention the presents made since the last meeting; shall give notice of Candidates that stand proposed for election into the Society; and shall read the letters and papers presented to the Society, in the order of time in which they were received, unless the President shall otherwise direct.

III.—The Secretaries shall have the charge, under the direction of the Council, of printing the Transactions of the Society, and of correcting the press.

CHAPTER X.

Of the Librarians.

I.—THE Librarians shall have the superintendence of the Sub-librarian in all matters relative to the Library, and be permanent members of the Library Committee.

II.—They shall, with the assistance of the Library Committee, inspect the Library once a year, at the time when the Books are ordered in, and make a report on the state of it, to the annual general meeting of the Society.

III.—They shall have the charge, under the direction of the Council, of ordering books, and printing Catalogues of the Library.

CHAPTER XI.

Of the Sub-librarian.

I.—THE Sub-librarian shall either not be a Fellow of the Society; or, if a Fellow, shall cease to be so on his election to, and acceptance of that office.

II.—The Sub-librarian shall live in, and have the care of, the Society's House, and of the Library and other property contained in it; and shall give such security as may be required by the Council.

III.—He shall enter into the Catalogues, and mark with the Society's Stamp, all Books presented to, or bought by the Society, as soon as they may be received; and shall give out the Books to the Fellows, and do the other business of the Library, according to the directions of the Council and Librarians. He shall regularly collect the Annual Contributions as they become due, and pay the same to the Treasurers, or person whom they may appoint to receive them, at such time as they may be required. He shall prepare and transmit the summonses, and shall always be in attendance at meetings of the Society and Council. He shall be subject to such other rules and orders as may be given to him by the Council, and shall receive such remuneration for his services as they may deem proper.

CHAPTER XII.

Of the Council.

I.—THE Council shall have the management of the affairs of the Society, and shall appoint such resident officers and servants as they may deem necessary; shall fix their duty, and suspend or remove them when they see occasion. They shall determine upon such security as may be proper to be given by such officers and servants.

II.—The Council shall meet at the House of the Society once a month, or oftener should they see occasion; and three shall be a quorum. Due notice of each meeting shall be sent to every Member of the Council.

III.—Special Meetings of the Council may be held on the requisition of the President, or any three Members.

IV.—All questions in the Council shall be determined by vote, or by ballot if demanded; and, in case of an equality of votes, the President shall have a second, or casting vote.

V.—The Council shall form a standing Committee to determine upon the propriety of publishing, with the consent of the Authors, such Papers as may have been read in the Society.

VI.—They shall be empowered to call to their assistance any Fellows of the Society, not of the Council, whom they may consider to be well skilled in any particular branch of science which shall happen to be the subject matter of any such Paper; and the persons so called in to assist, may give their votes on all Papers considered at any such Meeting, in the same manner as the Members of the said Committee.

VII.—The method of proceeding upon the Papers

to be considered shall be this:—The first entry in the Minute Book of the Society, relating to any Paper upon which the opinion of the Council shall not have been taken, shall be read; and, if any Member should desire it, the Paper itself shall be read, but otherwise only the minute relating thereto: after which, the question shall be put, and decided by ballot, whether that Paper shall be printed in the Transactions of the Society. But if the number of votes be equal, the further consideration of the question shall be adjourned to the next meeting of the Council; when, on a second balloting, if there still be an equality of votes, it shall be determined in the negative.

VIII.—The Council shall annually appoint a Library Committee, of which the Librarians shall be permanent Members, to assist them in the selection of Books, and in the management of the Library; and shall have it in their power to appoint as many other Committees as they may think useful for promoting the objects of the Society, and to admit into such Committees, any Fellows of the Society, whether Members of the Council or not. Such Committees shall act upon the instructions which they receive from time to time from the Council, to whom they shall report their proceedings; and their appointment shall last for no longer time, than up to the day of the succeeding annual election.

IX.—The Council shall exercise such other powers and authorities as are given to them by the Charter and Bye-laws; and shall, from time to time, make such regulations and issue such orders, not inconsistent therewith, as shall appear to them conducive to the good government of the Society, and to the proper management of its concerns.

CHAPTER XIII.

Of the Society's Transactions.

I.—THE Transactions of the Society, under the designation of MEDICO-CHIRURGICAL TRANSACTIONS, shall be printed at such times, and in such a manner, as the Council shall direct.

II.—Every Resident Fellow of the Society whose subscription is not a year in arrear, shall be entitled to receive, gratis, one copy of each volume which may be published subsequently to his being admitted a Fellow: and the Council shall be empowered to present, in the name of the Society, copies of the Transactions to such scientific bodies as they may think proper.

III.—Every Non-resident Fellow of the Society, on payment of the sum of Six Guineas, in addition to the usual admission fee, is entitled to receive, without any further expense, One Copy of every volume of the Society's Transactions which may be published subsequently to such payment.

IV.—Authors of Communications may, on application to the Secretary, be furnished, at their own expense, with private copies, to an extent not exceeding thirty, of every paper which may be presented by them to the Society, and printed in the Medico-Chirurgical Transactions: but such copies are not to be delivered to them, unless by a special order of the Council, till the volume is ready for publication.

CHAPTER XIV.

Of the Library.

I.—THE Library shall be under the management of the Council, and, subject to their direction, of the Librarians

and Library Committee.—It shall be open every day, (Sundays excepted,) from One o'clock till Five. The Council shall be empowered to designate such works as shall not be allowed to circulate.

II.—Eight Books shall be allowed to be in the possession of a Fellow at the same time. Pamphlets and periodical publications are not to be kept above one week, nor any other book above two weeks.

III.—Periodical publications and new books shall remain on the Library table, for the inspection of Fellows, for a month after they are received; and, during this time, they shall not be allowed to circulate.

IV.—When a Book is wanted which has been in the possession of a Fellow the stipulated time, the Assistant Librarian shall send a notice by the post, to the person in whose possession it may be, requesting the return of it: and a fine of Sixpence per day shall be incurred for every day that it may be detained, after the third from the transmission of such notice.

V.—The Books shall be ordered in for inspection a fortnight before the Annual General Meeting, and a fine of Five Shillings per volume shall be incurred, for neglecting to send in Books by the time required in the notice.

VI.—A Book shall lie on the Library table, in which Fellows may insert, for the consideration of the Council or Library Committee, the titles of such works as they may wish to be purchased by the Society.

VII.—Fellows who borrow Books from the Library, shall be answerable for the full value of any that may be lost or injured.

VIII.—The Council shall have it in their power to collect the fines in the way which they may think best.

CHAPTER XV.

Of ordinary General Meetings.

I.—THE ordinary General Meetings of the Society shall be held on the second and fourth Tuesday evenings of every Month, from November to May, both inclusive, at half-past Eight o'clock.

II.—Each Fellow of the Society shall have the privilege of introducing a stranger at every ordinary Meeting, on delivering his name to the President, or person acting in his stead: and the name of every stranger, so introduced, shall be entered in the Minute Book.

III.—The business of the Society at their ordinary Meetings, shall be to converse upon professional subjects, and to read and hear Letters, Reports, and other Papers, on Medicine or any of its branches.

IV.—At the ordinary General Meetings of the Society, nothing relating to its laws or management shall be brought forward.

V.—At ordinary General Meetings, five shall be a quorum; but ten shall be necessary for the election of Fellows; and no election shall take place at any other than ordinary General Meetings.

VI.—Additional ordinary General Meetings may be held during the summer, when the Council may think them necessary.

CHAPTER XVI.

Of the Annual General, and Special General Meetings.

I.—THE Annual General Meeting of the Society, for the election of the Officers, and other Members of the

Council, shall be held on the 1st of March, unless that day should happen to be Sunday, in which case it shall take place on the day following.

II.—The President and Council may, at any time, call a Special General Meeting of the Society, when it seems to them necessary: giving at least one week's notice to every Resident Fellow of the Society, of the period of meeting, and the business upon which it is summoned; and no business shall be entered upon at such meeting, except that which has been so notified.

III.—The making of new, and altering of old Bye-laws, shall be first proposed in the Council; and such new Bye-laws, or alterations of old ones, if approved, and approbation be confirmed at a subsequent Meeting of the Council, shall be recommended by them for adoption to the Annual General Meeting, or to such Special General Meeting as they may think proper to call; and shall be suspended in the Society's room, for the inspection of the Fellows, from the time that the summons for such General Meeting is transmitted; and if at such General Meeting, consisting of not fewer than ten Fellows, two-thirds of the Fellows present ballot in favour of the said new Bye-laws, or alterations in the old ones, the same shall be declared to be the law of the Society accordingly.

IV.—Any three Fellows who are not of the Council, may recommend new Bye-laws, or the repeal or alteration of old ones, to the Council, by a letter under their hands, and transmitted to one of the Secretaries. On the recommendations thus made, the Council shall come to a decision at their first meeting; and if such decision shall not be satisfactory to the said three Fellows, the Council, if required by them, shall, at the Annual General Meeting,

or some Special General Meeting which they shall summon for the purpose, bring the same forward, with their decision thereupon, for the opinion of the Society at large.

CHAPTER XVII.

Of the Society's Property.

I.—THE whole of the Society's Property and Effects, of what kind soever, shall be under the direction and management of the Council, subject to the instructions and control of General Meetings of the Society: and the Council shall not sell, or otherwise dispose of, nor mortgage, or encumber, the lands, tenements, hereditaments, or effects of the Society; nor enter into any lease or agreements on account of the Society, nor vacate any such leases or agreements, without the sanction of a Special General Meeting of the Society, or of the Annual General Meeting, due notice having been given of the business to be then taken into consideration.

CHAPTER XVIII.

Of Donations to the Society.

I.—EVERY Person who shall present Books, Money, or other Property to the Society, shall be considered a Benefactor thereof.

II.—His name, with the mention of the gift, shall be recorded in the book of Benefactions, shall be read at the Annual General Meeting, and shall be inserted in the first Volume of the Transactions of the Society thereafter published.

III.—Books presented to the Society shall have the donor's name inserted in them.

CHAPTER XIX.

Of the Common Seal and Deeds.

I.—THE Common Seal of the Society shall be a representation of Salus raising a kneeling figure*; with the motto, NON EST VIVERE, SED VALERE, VITA†; and the date of the formation of the Society, 1805; surrounded by a Garter, having on it, SIG. SOC. REG. MED. CHIR. LOND.

II.—The Charter, the Common Seal, and Deeds of the Society, shall be deposited in an Iron Chest, having two different locks; the key of one of which locks shall be kept by the President, or person officiating in his stead, and the key of the other, by one of the Treasurers.

III.—The Common Seal shall not be affixed to any deed or writing, except at a meeting of the Council, and by their authority; and such deed or writing shall then be signed by the President, or other Fellow in the Chair, and by two of the Fellows present.

* Figura Muliebris stans; dextrâ, figuram virilem procumbentem sublevat; sinistrâ, baculum, serpente involutum, gerit.—From a rare medal of Caracalla, in the British Museum, described in Vaillant's Numismata Imperatorum Romanorum.

An Engraving of the Society's Seal is given in the Title-page.

† Martial Epigram. Lib. 6. Ep. 70.

APPENDIX.

No. I.

Letter notifying the Election of a Resident Fellow.

ROYAL MEDICAL AND CHIRURGICAL SOCIETY,
53, BERNERS STREET, LONDON.

THE 18—.

SIR,—I have the honour to inform you, that on the ——— of ——— you were elected a Fellow of the Royal Medical and Chirurgical Society; and I beg to transmit to you a card of the Meetings for the season. According to the Regulations of the Society, you are required to pay your admission fee of Six Guineas, and to appear at a Meeting of the Society for admission, on or before the ——— pay of ——— otherwise your election will be void.

I have the honour to remain, Sir,

Your most obedient and humble Servant,

SECRETARY.

No. II.

Letter notifying the Election of a Non-Resident Fellow.

ROYAL MEDICAL AND CHIRURGICAL SOCIETY,
53, BERNERS STREET, LONDON.

THE 18—.

SIR,—I have the honour to inform you, that on the ——— day of ——— you were elected a Fellow of the Royal Medical and Chirurgical Society; and I beg to transmit to you a printed copy of an obligation, which you are requested to subscribe and to return, addressed to the Secretaries, at the Society, on or before the

_____ day of _____ together with an order on London for your admission fee of Six Guineas; otherwise your election will be void.

On the payment of a further sum of Six Guineas, you will be entitled to receive, without any further expense, one copy of every volume of the Society's Transactions, which may be published subsequently to such payment.

I have the honour to remain, Sir,

Your most obedient and humble Servant,

SECRETARY.

No. III.

Obligation to be transmitted to Non-Resident Fellows on their Election.

_____ THE _____ 18____.

I HEREBY promise, that I will, to the utmost of my power, promote the honour and interest of the Royal Medical and Chirurgical Society of London, and observe the enactments of its Charter and Bye-laws, as long as I continue a Fellow thereof.

Signed _____

No. IV.

Diploma of an Honorary Fellow.

SCIANT omnes, Præsident, Concilium, et Sodales, Societatis Regiæ Medico-Chirurgicæ Londinensis, virum doctissimum et spectatissimum _____ in Sodalitium suum, inter Socios Honorarios cooptasse. Cujus rei, in testimonium fidemque, has literas, manibus nostris, et sigillo Societatis munitas, lubentissime dabamus. Londini, _____ die Mensis _____ Anno Domini 18____.

No. V.

Permanent Order on a Banker for the Payment of Contributions.

MESSRS. ————— Pay to ————— my Annual Contribution of Three Guineas to the Royal Medical and Chirurgical Society of London, due on the 1st day of March; and the same amount on that date in every succeeding year, till further notice.

I remain, Gentlemen,

Your obedient Servant,

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OF LONDON,
NOMINATED IN THE CHARTER.

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COUNCIL.

SIR ASTLEY PASTON COOPER, BART. F.R.S.
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CASES
OF
FRACTURE
OF
THE NECK OF THE FEMUR;
WITH THE
APPEARANCES OBSERVED AFTER DEATH.

BY JOHN HOWSHIP,

LECTURER ON SURGERY IN THE MEDICAL SCHOOL AT THE CHARING
CROSS HOSPITAL, AND SURGEON TO THAT HOSPITAL.

READ NOVEMBER 26TH, 1833.

THE cases and dissections I have now the honour to submit to the attention of the Society, appear to possess some features of interest and importance. They do not demonstrate the full extent of the constitutional powers, as occasionally manifested in the production of ossific union; but they may, nevertheless, suggest certain remarks illustrative of this process, which remarks may probably form the subject of some future communication.

No. I.

Fractured Cervix Femoris; immediate Shortening, with Eversion of the Limb. Appearances at three weeks.

April 23, 1829. I examined the body of M. H., aged 76. She had fallen on the trochanter of the

right femur ; and from that moment was unable to move or stand.

The day after the accident, I found the right limb an inch and a half shorter than the left, with eversion of the foot. Motion produced great distress. Without much pain or suffering she gradually sunk and died, three weeks after the fall.

On dissection, I found the fracture oblique ; above, it passed through the cartilaginous margin of the head of the bone, extending obliquely round, and separating the lower part of the neck three-fourths of an inch below its junction with the head.

The separation of the bone was complete, but the ligamentous investment covering the cervix posteriorly, was entire ; at the lower portion of the anterior surface a single fibre of this texture remained, restricting the edges of the fracture to the distance of half an inch. The neck of the femur had lost half an inch of its length, by absorption.

The synovial fluid was deeply tinged with blood, and between the fractured surfaces small masses of coagulated blood were observed, together with a minute detached cancellated fragment of bone. The cartilaginous surfaces of the joint were much discoloured and appeared as if their texture was ecchy-mosed ; these surfaces, soiled with grumous blood, it was necessary to wipe clean, when it was manifest the

cartilage itself was stained of a dull red hue, from blood diffused apparently through its substance. There was no appearance of any attempt towards union.

The preparation demonstrates the capsule much thickened and ecchymosed; and the round ligament of a livid red colour, but so wasted as to be scarcely perceptible.

No. II.

Fractured Cervix Femoris; slight Eversion; no Shortening till six weeks afterward. Appearances at two months.

June 19, 1831. I examined the body of C. D., aged 75, injured by a fall on the right hip, two months before.

On observing the recent state of this accident, both limbs measured the same length, the only peculiarity being a slight eversion of the leg and foot.

The limb admitted of being moved and raised with facility, and without pain or crepitus.

She had fallen with the hip on the edge of a stair, and, attempting to rise, fell a second time, and was then carried helpless to bed.

She suffered little, but latterly the limb became imperceptibly shortened, about an inch.

On dissection, I found the capsule of the right hip much thickened and condensed, especially above the articulation. The fracture passed round the neck of the femur near its head. The posterior half of the ligamentous expansion covering the neck of the bone remained entire, with the exception of two or three small openings. Indeed, the degree of thickening and compactness of texture, in this expansion, forms one of the most interesting characters in this specimen.

Inferiorly, the fracture left the margin of the upper fragment sharp; and the trochanters drawn upwards, as interstitial absorption advanced, the inferior portion of the ligamentous investment had ulcerated; a similar change having exposed what remained of the inferior part of the neck of the femur.

Between the fractured portions, were several light, tender, fibrinous bands, tinged with blood, connecting the cancellous surfaces to each other. The neck of the bone had lost three-fourths of an inch of its length, by absorption. The round ligament entire, was discoloured by blood effused into its interstitial texture; a similar tinge having extended itself into the fatty substance surrounding the attachment of the ligamentum teres at the bottom of the acetabulum; appearances still visible in the preparation.

In the abdomen, the common trunk and internal iliac veins on the left side, were filled with a compact coagulum of blood; the common iliac especially

was so perfectly filled, that it is not easy to understand how, towards the close of life, the blood was returned to the heart; although there had been no oedema of the lower limbs.

The left femoral vein, for some extent, is seen filled with a coagulum of dark blood, the colour above being more florid, and the texture more compact than below. A small coagulum also may be observed in the common trunk of the right iliac vein.

Although these latter changes were the apparent result of inflammation, rendering the colour of the inner surface of the vena cava deep red, there was no material thickening in the coats of the vessel, no visible deposit of fibrine in the cellular tissue, nor any effusion of fibrine or pus into its cavity.

No. III.

Fractured Cervix Femoris; immediate Shortening, with slight Eversion of the Limb. Appearances at five months.

Dec. 5, 1828. E. M., æt. 78, five months before death fell with her right hip on the floor. On the following day, I found that moving the limb gave great pain, but produced no crepitus. Both limbs straight, the right heel lay an inch higher than the left, with slight eversion of the foot. She died from sloughing of the integuments covering the sacrum.

On dissection, I found the fractured head of the femur separated within the capsule, which was thickened, compact, and ecchymosed. The head of the femur, raised from its place, enabled me to perceive that the cartilaginous surfaces were of a dark red colour, but not ulcerated; the round ligament ecchymosed, wasted, and pulpy. The soft matter occupying the cancerous fractured surface of the head, was a grumous granular mass. What yet remained of the fractured neck was undergoing absorption; the surface perforated with numerous foramina; filled with a soft granulated substance, similar to that just mentioned. At one point, the lower margin of the fractured neck was attached, by a fibrinous band, to the corresponding part of the head of the bone, and also to the capsule of the joint.

From the exposed cancellated surface of the cervix femoris, in this specimen, a flat cartilaginous plate is seen standing out in a vertical position; an appearance which, as the cartilages of the joint are still entire, it is difficult to explain.

No. IV.

Fractured Cervix Femoris; with immediate Shortening, and Eversion of the Limb. Appearances at ten months.

Oct. 13, 1832. L. M., æt. 79, fell on her right side. The same evening I found the neck of the

right humerus broken obliquely, and the neck of the right femur also fractured, with the usual symptoms, great pain in the joint, inability to bear motion; with shortening and eversion of the limb.

For this patient little could be done. Her mind imbecile, she forgot or neglected every thing said to her; neither was she disposed to admit of any means being adopted for her relief. She sank and died, August 6, 1833.

On dissection, I found the uniting medium of the fractured humerus so soft as to admit elastic motion.

The capsule of the hip thickened; the fracture had separated the neck irregularly, about half an inch below its junction with the head. There were no fibrous bands to connect the fractured parts together; but the surface of the upper fragment was fairly covered with cartilage, except a small space at its lower part, the size of a split pea, presenting a hard, polished, ivory-like substance.

The ligamentous investment of the upper and back parts of the neck was entire, attaching the head and basis of the neck to each other. The neck of the femur was nearly absorbed; the part remaining being modelled into a little crutch, exactly fitted to receive and support the head, and almost entirely covered with cartilage. At the upper margin of the neck, and beneath the ligamentous investment, was a

small flattened piece of cancellated bone, covered with cartilage, attached to the ligament, yet entering into the moving fabric of the new joint.

The round ligament, pulpy, and discoloured by ecchymosis, (although no fluid tinged with blood was found in the joint,) was attached by both its extremities; yet the cartilages and bone were ulcerating deeply away, by the agency of red fleshy granulations, still visible in the preparation; springing from within the bone surrounding each insertion of the ligament.

No. V.

Fractured Cervix Femoris; no immediate Shortening, slight Eversion of the Limb. Appearance at twenty-two months.

May 5, 1828. E. B., aged 79, fell upon the right trochanter. The same day, I found both limbs the same length. The knee and foot slightly everted; the hip joint with some pain admitting free motion. She could neither stand nor move the limb; complaining of pain in the joint and groin.

It being doubtful whether fracture existed, and there being reason to apprehend interstitial absorption, and progressive shortening might nevertheless result, as in another case *, I determined to try the effect of counter irritation. For this purpose (Aug. 7) a

* See Case No. VII.

small blister was applied, and kept open ; behind the articulation.

Aug. 20. The blister very sore, pain in the joint relieved ; she slept much better than before.

Nov. 4. So much relieved, that the hip was entirely free from pain.

Feb. 28, 1829. The discharge maintained six months, the blister was allowed to heal. The benefit derived being freedom from pain, and improved power of moving, and bearing on the limb. The experiment had failed in its principal purpose, the prevention of shortening, as this change commenced, almost insensibly, during the period of its application ; a change less perceptible than it otherwise might have been, from muscular retraction having drawn the affected limb across the other.

May, 1830. The general health gave way ; she became anasaralous, and soon died.

The limbs laid straight ; the right leg and foot, much everted, proved to be three inches shorter than the left. Exposing the capsule, and opening the joint, I found the head of the femur separated from the shaft, by a fracture passing round near the margin of the head. The cancellated surface of the head was at many points covered with minute nodules of fine cartilage.

The neck of the femur was gone ; part of the space between the trochanters being covered with a ligamentous fibrine, the intervals presenting open cancelli, with minute nodules of cartilage, similar to those on the opposite surface of the head. From the upper part of the basis of the neck of the femur, many rounded projections of bone, covered with cartilage, were put forth, over which the thickened capsule moved with facility.

A strong fibrinous band, three-eighths of an inch long, connected the upper margin of the head to the opposite surface of the neck. A second strong band connected the neck of the bone to the capsule, on the upper edge of the acetabulum.

The capsular ligament, on its superior part, was half an inch thick, where its breadth was so diminished as to have brought the margin of the trochanter nearly into contact with the acetabulum. Fibrinous effusion, not confined to the seat of fracture, presented itself on most parts of the synovial membrane : one little mass, attached by a narrow basis to the anterior part of the capsule, was nearly the size of a scarlet bean ; another, entirely detached, in a recess within the joint, had assumed all the characters of a loose cartilage, a fine elastic structure, and smooth surface.

The round ligament, although visible in the preparation, is exceedingly wasted and shrunk.

No. VI.

Fractured Cervix Femoris; immediate Shortening and Eversion of the Limb. Appearances of partial compact Ligamentous Union, at eight years.

July 26, 1828. R. S., aged 70, had fallen, three years before, upon the right hip. With severe pain, total loss of power, and some shortening of the limb, she lay in bed six weeks, and then with crutches began to move about. It subsequently became much shorter, and had "gradually grown shorter of itself." On the approach of cold or wet weather, there was still pain in the bone; and, if leaned upon, it became violently painful in the joint, and parts around.

I found the right limb two inches shortened, with trifling eversion. Abduction gave great pain. A smart blow on the bottom of the heel did the same thing; and the pain in the bone became equally acute on making a gradual but firm pressure in the same direction.

In walking, she supported herself entirely on her crutches, scarcely touching the ground with the toe of the injured limb.

She was desired to keep her bed; and a small blister, applied behind the trochanter, was kept open many months; from this she found relief. A few

days after it was laid on, the blister sore, the pain within was much less. She slept much better than before.

January 20, 1829. The blister was healed ; the joint feeble and weak. She remained perfectly easy.

July 15, 1831. The hip joint, from weakness, was still incapable of supporting the least weight. Considering the extreme deficiency of strength in the articulation, I determined to try the effect of keeping the fractured surfaces in contact for a time ; and had her therefore placed on the double inclined plane.

August 6. The confinement proved so irksome, that in three weeks, yielding to her urgent entreaty, I directed her to be removed to a common bed, and soon allowed her to use crutches.

September 10. I met this woman walking without crutches. She had a little stick, and said her right hip was now nearly as strong as ever ; she felt no pain in leaning upon or even striking it with her hand, which was not so before being placed upon the bed.

May, 1833. Informed of her decline and death, I did not fail to remove the joint. The fractured surfaces were connected by an unusually strong ligamentous adhesion, to demonstrate which required

the cutting away of nearly the whole capsule. The fracture had followed the line of the margin of the head of the femur, the neck being nearly absorbed. Anteriorly, a line or web of strong, short, fibrinous bands is seen, connecting the head of the femur, and upper part of the acetabulum, to the basis of the neck; these attachments extending from the upper to the lower margin of the acetabulum. Posteriorly, the fractured surfaces are seen attached by one thin band of fibrine only.

Inferiorly, the capsule, at one point, may be observed to be united by adhesion to the margin of the head of the bone.

No. VII.

Fractured Cervix Femoris; slight Eversion, no immediate Shortening of the Limb. Appearances at fourteen years.

January, 1828. I visited S. M., a healthy woman, aged 62. Twelve years before, descending the ladder of a waggon, she fell, with the left hip on the stones. Entirely helpless, she was carried into an infirmary, where both limbs, being found of the same length, the injury was said to be only a severe bruise. In three months she walked well, without a stick.

This woman, in strong and active health, was equal to every laborious occupation. Her gait was rather awkward, her left leg being two inches

shorter than the right; but she never felt either pain or weakness. I found the motions of the hip ample and free, with trifling eversion of the leg and foot.

February, 1830. Informed of this person's death, the parts were, at my desire, removed. I laid open the joint by an anterior crucial incision, exposing the synovial cavity. The line of fracture was about an inch from the margin of the head. The part of the neck remaining between the trochanters was so nearly absorbed as to have left only a gentle elevation towards the middle of the space, answering to a depression on the opposite surface. Both surfaces were covered with a copious secretion of cartilage, on some parts deposited in flattened nodules, on others presenting an even surface.

The capsule was condensed, as usual. In the substance of the capsule, above, a large bursa had formed, between the margin of the trochanter and edge of the acetabulum. There was a free effusion of fibrine into the joint; and the head of the bone was so closely adherent to the capsule, as to prevent its being raised from the acetabulum, to ascertain the state, or indeed the existence, of the round ligament.

There were no fibrinous bands connecting the fractured surfaces; the only attachments of that kind were those just mentioned, the apparent object of which was, to steady the head and neck of the

bone, in a particular position, and give freedom and facility of motion to the new joint.

It is evident, in this case, that when the weight of the body, in walking, was placed on the limb, the action between the femur and pelvis was amply provided for, in the new articulation; although the principal support was derived from the great strength of the capsule.

No. VIII.

Fractured Cervix Femoris ; immediate Shortening and Eversion of the Limb. Appearances of compact Ligamentous Union, at five months.

July 1, 1829. M. C., aged 66, fell over the kirbstone, on the right hip, fracturing the neck of the femur. I found the limb shortened two inches and a half; the foot everted.

September 19. She was laid on the double-inclined plane, but in a fortnight became urgently impatient to be set at liberty, and so infirm that the nurses could scarcely keep her clean. For these reasons the experiment, promising nothing, was given up, and she was removed to a common bed, where she gradually sunk, and died November 22.

On dissection, the only evident source of irritation

was in the gall-bladder, which was nearly filled by a collection of small dark-green biliary calculi.

In the hip joint the neck of the femur appeared very much shortened, but not disunited from the head, which remained perfect, and covered with a thickened capsule. The capsule opened; the head of the bone was gently raised from the acetabulum. The round ligament was so wasted as to have become entirely disunited, at its insertion upon the femur. Some shreds of its substance still remained attached at the bottom of the acetabulum, and are still visible in the preparation; but in the depression upon the head of the femur, no trace remains.

It appears that when fractured the head of the femur had been separated high up, and the neck of the bone subsequently absorbed. The head of the femur was no longer separated; for the neck removed by absorption, and the parts steadily retained in apposition, the head of the bone had settled itself so firmly into the space between the trochanters, that it appeared, at first sight, a specimen of ossific union.

To ascertain the precise state of the uniting medium, I divided the head and shaft longitudinally with a saw, in which operation the attachment of the parts suffered no apparent disturbance.

The section of this specimen in the preparation,

presents a perfect example of compact ligamentous union. The fractured surface of the head, and basis of the neck, are seen so closely in contact as to exhibit only an interposed lamina, scarcely thicker than pasteboard, of compact ligamentous substance.

No. IX.

*Fractured Cervix Femoris. Immediate Shortening;
at first slight Inversion, subsequently Eversion
of the Limb.*

January 28, 1833. E. B., aged 79, fell upon the left trochanter: totally helpless. She was unable to get up, or stand, move the limb, or allow it to be moved. I found her the next morning in great pain, the limb three inches shortened, the toes inclined, at first inward, subsequently outwards.

February 2. She was laid on the inclined plane. At first the limb was obstinately rigid, and retracted, but the next day the tired muscles relaxed, the hip became easier. During her confinement, the repose and apposition remained perfect. She latterly complained of her loins and back.

March 23. Having remained forty-nine days on the inclined plane, she was lifted off to a common bed, and laid on her right side. The change of position, and comparative freedom, added much to her comfort.

March 28. The hip joint was cautiously moved, and progressively examined; and it appeared that the fracture was well united. The muscles of the thigh were stiff and painful, when moved; but without the least pain in the hip. On taking hold of the trochanter, behind and before, and pressing it forwards and backwards, it felt as if firmly united to the head of the bone.

May 10. Daily attempts had improved the power of moving about, without inducing pain in the hip-joint. She could now place nearly the whole weight of the body on the left foot.

August 13. From irritable bowels, her strength had sunk considerably; she was unable to leave her bed: but both limbs were equally weak and reduced. The left leg and thigh, at this time measured, was nearly an inch shorter than the right. This woman, somewhat improving in health, subsequently left the house.

Saville Row,
Sept. 9th, 1833.

CASES
OF
WARTY TUMOURS
IN CICATRICES.

BY CÆSAR HAWKINS, Esq.

SURGEON TO ST. GEORGE'S HOSPITAL, AND LECTURER ON
SURGERY.

READ 10TH DECEMBER, 1833.

IN describing a variety of tumours and other diseases, medical men are in the habit of adopting terms to which different significations are attached by different persons, and by this means great obscurity has arisen in pathological anatomy, which might have been avoided by more precise definitions: and among other terms of this sort is the word *malignant*, as applied to disease. By a malignant disease is meant by one person a local malady, depending upon a constitutional taint, which renders that malady incurable and invariably fatal, in the way that cancer and fungus hæmatodes are invariably fatal; while another person will call a disease *malignant* which is simply *incurable*, without any definite reference in his mind to the state of the constitution. Thus it is that lupus, and the corroding ulcer of the uterus, are called *malignant*, though in the more formidable sense they are clearly not so, since the disease does not contaminate either the surrounding parts or

the absorbent glands, by the formation in them of a *new structure*, like that developed in the seat of the primary disease, nor is a similar disease established in another part of the body by means of this contamination.

Even in those diseases which are manifestly malignant, in the more confined sense in which cancer is malignant, there is great difference in the *degree* of malignancy, which the surgeon ought well to understand. Cancer of the breast very often returns in the same part, when removed by the knife ; almost always affects the absorbent glands, and the appearance of a similar disease in some internal organ is always apprehended. In cancer of the scrotum, on the other hand, the removal of the diseased part is undertaken with well-grounded confidence that the disease will not reappear in the same place ; the absorbent glands are often not affected, and scarcely ever is any similar disease found in the liver or any other internal organ.

But it seems to me that we want some word for those diseases which *do form a new structure* capable, apparently, of contaminating the surrounding parts, so that the removal of the whole of the altered structure is necessary, but which *do not*, as far as I know, produce any contaminating influence upon the absorbent glands, and have no tendency whatever to reappear in a distant and unconnected part of the body. Such a disease is familiar to most surgeons in the skin of the face of

elderly persons, and is often, but I think erroneously, called *cancerous* and *malignant*, since if the new structure at its basis be completely taken away, there need be no apprehension of any return of the disease, either in the same part or elsewhere: or at least if the new structure really possesses the nature of *cancer*, it must be clearly understood that the disease is *cancerous* and *malignant* in the very lowest degree. Of this kind also is the disease which I purpose to describe by the recital of a few cases which have fallen under my observation, and which, as far as I know, is not described in any surgical writings.

The tumour, which I will call the WARTY TUMOUR OF CICATRICES, makes its appearance in some old scar, many years after the injury which has produced it has been healed, whether a burn, a cut, or a laceration of the skin; and it arises equally from a flogging or a scald, in which the skin alone has been injured, or from a cut or gun-shot wound, which injures also the tendons or bones below the skin, and makes a more complicated cicatrix. There appears in the first place a little wart, or warty tumour, in the cicatrix, which is dry and covered with a thin cuticle, but which soon becomes moist, and partially ulcerated, like the warts of mucous membranes, from which a thin and offensive, and semi-purulent fluid is secreted. In this stage it gives no pain nor inconvenience.

CASE I.

This first stage is shewn in a preparation of a tumour, about the size of a small apple, which was

removed, about the year 1826, by Sir Benjamin Brodie, in St. George's Hospital, from a man who had been a soldier in India for many years, and had been repeatedly flogged for some offences. The last punishment had been a flogging of 1000 lashes, eleven years before his admission. In the cicatrix several warts sprung up, which coalesced to form a tumour, the probe passing between them to the basis of the disease. Around the tumour the skin was of a dark livid colour, and studded with several smaller warts. The man easily recovered, and had no return of the disease.

In the second stage of the disease the growth of the tumour becomes more rapid, the warty appearance being in some measure lost, a more solid substance projecting from the diseased skin, which bears much resemblance to the fungus of fungus hæmatodes; the formation of fresh warts being still seen around the tumour, and preceding the change which has been alluded to. The tumour is very vascular, and bleeds when touched, but its irregular surface still allows the probe to pass through its structure, except where it is most firm.

CASE II.

John Pegram, æt. 45, was admitted into St. George's Hospital, April 18th, 1827, under the care of Mr. Jeffreys.

There was a large tumour connected with the skin of the back, somewhat elevated, and with the edges

overlapping the surrounding skin, which was drawn in and puckered round the tumour. The tumour was about five inches in diameter, and the skin appeared to be partly connected with the spinous processes of the dorsal vertebræ, and with the spine of the scapula. The tumour was warty and irregular, and had an ulcerated surface, discharging a thin, sanious matter. The man's countenance was sallow, the appetite however not impaired, the bowels in general constipated, and his sleep at night disturbed by shooting pain in the back.

The tumour arose in a cicatrix produced by a flogging which he had received twenty-seven years before, the effects of the punishment not having been quite got rid of for eighteen months after it had been received; but since that time the cicatrix had remained quite well till September of the last year, when a piece of wood fell upon him, and slightly grazed the skin. This healed easily, but shortly afterwards he found a small lump in the part, which soon ulcerated, though without much pain. At Christmas last it had acquired the size of a penny-piece, when he began to experience pain, and lost flesh considerably; and the tumour progressively increased to its present size. About four days after his admission, he felt pain, *like cramp*, in the ham and calf of one leg, which subsided however without swelling or tension, and on the 27th the tumour was removed by operation, the actual cautery being applied over the spine of the scapula, where the tumour

was most fixed, and lint dipped in a strong solution of sulphate of copper applied to the upper part of the exposed surface, which did not look quite so healthy as the rest.

The wound looked healthy when dressed on the 30th, and the pulse was only 96 for three days after the operation; but on the 1st of May, four days after the removal of the tumour, he was attacked with severe rigors, with profuse perspiration, and died on the 4th.

The cause of death appeared to have been inflammation of the veins of the leg, of which there had been such trifling evidence before the operation, that it was disregarded. All the deep veins, however, from the foot to the internal iliac, were filled, and the circulation wholly stopped by coagula, which extended even into the muscular branches. Their coats were considerably thickened, especially about the ham, where the pain had been felt, and there was slight purulent effusion into the cellular membrane around the popliteal vein. The superficial veins were healthy and pervious. There was pus also diffused in the cellular membrane behind the peritoneum, about the iliac and psoas muscles. The right pleura contained a pint of seropurulent fluid, and there was thick purulent secretion in considerable quantity in the cells of the lung. Nothing remarkable was observed in the wound, or in other parts of the body, and the patient's death seemed therefore to

be quite unconnected with the tumour, unless absorption of pus from its surface, previous to the operation, had given occasion to the venous inflammation and serous effusion.

The preparation of this tumour, however, does not shew the appearance and character of the disease so well as those taken from the next case, of which I had a drawing made, which has been placed on the table with the preparation. In them the relation of the disease to the subjacent parts is well seen; and it will be observed, that even when of very large size, it is still essentially a disease of the skin. The cutis around the tumour, which has not yet become prominent in the form of warts, is thickened and fibrous, and divided by furrows, having very much the appearance of the skin from which the hoof of the horse grows, and to which it is attached. The section of the central tumours is firm and smooth, but if carefully examined may still be found to consist of fibres rising perpendicularly from the base of the tumour, where it is attached to the fascia, all trace of the original texture of the skin being here lost, though it may be gradually traced into the unchanged part of the cutis of the cicatrix around the tumour.

CASE III.

Susan Farrington, æt. 28, was admitted into St. George's Hospital, Oct. 23, 1833, under my care.

The left leg and foot had been scalded severely, when she was a child, so that the sore was more

than a year in healing, and the surface of the cicatrix has since then frequently ulcerated, the last time being about two years ago; but on these occasions the ulcer presented no remarkable appearance. Four months ago the sore ulcerated afresh, and in about six weeks began to put on its present raised appearance.

On her admission there was a prominent tumour, about two inches and a half above the surrounding skin, which was four or five inches long, and extended more than two-thirds round the leg. The surface had the usual irregular warty appearance of these tumours, and discharged a very foetid pus. The cicatrization of the former scald extended from the toes to very near the knee, and was wrinkled towards the tumour. The tumour allowed the probe to pass through it very readily, and when thus examined in various directions, there seemed to be no softening of the periosteum of the tibia, nor of the fascia of the leg.

She had latterly become thin and out of health, with a furred tongue, and quick and weak pulse, and more or less restlessness, from excessive pain and irritation in the tumour.

She improved a little in health at first under an alterative and tonic treatment, but the tumour continued to extend, and with increased rapidity. After a consultation with my colleagues, amputation was proposed to her; the great extent of the surface rendering the excision of the tumour impossible,

with any hope of new skin subsequently forming, so as to make the limb again useful; but the operation was not consented to.

After this the pain increased very much, the tumour spread very rapidly, and her health became so much disturbed that she was herself perhaps aware of the fatal character of the disease; and on coming to the hospital on the 28th of November, I found she had just sent a message, to say that if I would remove the limb immediately, she would consent to the operation, but not, if it could not be done at that time. Of course I did not delay the amputation, but removed the leg rather nearer the knee than usual, making a flap chiefly from the back of the leg, in order to leave as little as possible of the old cicatrix, which did not reach so high on the back part as it did in front.

By the removal of so extensive and so painful a disease, an immediate amendment has taken place in her health, and the stump is healing favourably*.

It will be seen, on examination of the preparations, that the tibia was perfectly healthy, excepting an addition of new bone from common inflammation, and that the disease had not extended through the fascia to which it adhered. The drawing was taken about three weeks before the operation, when the tumour began to lose some of its distinctive warty appear-

* July 1835. This patient was in the hospital not long since, for another disease, the stump having remained perfectly sound.

ance, by becoming somewhat sloughy on the surface, and by the warts becoming more solid and smother in their prominent extremities, so as to resemble fungus hæmatodes, or the fungous kind of cancerous tumours.

I allude especially to the perfectly sound condition of the tibia, because I believe many gentlemen, who saw the leg, were of opinion that the bone must have been diseased, and must have given origin to the tumour. I have placed however upon the table the cast of a case of a prominent fungus of a different kind, which is occasionally formed over carious bone, and which ought to be carefully distinguished from the tumour which I am endeavouring to describe. This fungus grows to the same height as the warty tumour, and resembles it in some measure in appearance, but even in the cast perhaps the difference may be perceived between them. In this exuberant growth from the cancellous structure of a bone, the projections are more like granulations; they are softer and redder than the warty tumour, and none of the peculiar changes in the skin around can be detected, which, I believe, uniformly precede the growth in question; on the contrary, the circumference of the diseased parts has the appearance of a common ulcer of the skin, and if the carious part of the bone on which the prominence depends be carefully dissected out by the chisel, the ulcer in the skin will readily heal.

But while I wish to assert the origin of the warty tumour from the texture of the skin, I am perfectly

aware that a disease of some bone may be *added* to the alteration of the skin, as was shewn in the last case, or as the following case may also prove.

CASE IV.

John Colley, æt. 45, was admitted into St. George's Hospital, July 10th, 1833, under the care of Mr. Babington.

About twelve years ago he cut the heel through the tendo Achillis so deeply as to expose the bone. The wound healed in three months, but the ankle and instep have, since the accident, continued stiff, and nearly inflexible, though he could walk about without pain. About two years afterwards an ulcer formed over the outer ankle in the cicatrix, which sometimes almost healed up, but has never completely cicatrized.

On his admission, a warty ulcer existed around the heel, at the bottom of which some bone could be felt. The tibia was also enlarged, and the joint stiff.

The leg was amputated July 25th, and although there was in the following month some pain in the stump, with prominent granulations, which excited some apprehension of the sore having been really cancerous, and about to reappear in the wound, yet he finally left the hospital October 8th, with the stump almost healed, and is now in better health than he had been for some time before the operation.

On examining the ankle, the bone of the heel was found inflamed, and rough and scabrous, as in common inflammation, but without any appearance of the disease having caused any other alteration of its structure.

It appears then that the tumour may be easily and safely removed from any part of the body. In the leg, indeed, the removal of the whole limb must generally be preferable where the tumour is at all extensive; but if its size admits of excision, there need be no fear of the disease being re-formed in any texture except the skin. Still, however, if there be any doubt whether the bone below may have become carious, or otherwise diseased, from the proximity of the tumour, a portion of it may be taken away without adding to the length of confinement.

CASE V.

James Callcott, æt. 49, was admitted into St. George's Hospital, May 28, 1828, under the care of Sir Benjamin Brodie.

He had a yellow, wart-like fungus, about the size of a crown piece, which rose above the skin, and through which some bone was felt; this was situated in the centre of some old cicatrices. He had received a blow on the shin from an anchor twenty-seven years previous to his admission, which was followed by a large abscess, out of which some dead bone had been taken while in a naval hospital, after which the

wound healed. Fourteen months ago he received another injury, which was also succeeded by an abscess, at the bottom of which the bone was exposed. The exposed bone was believed to be dead, but as it was not loose, he left the hospital till it was in a fit state to be removed; soon after this the fungus formed, and he was re-admitted, when the tumour seemed to be connected with the bone or the periosteum, or both. June 5th, the tumour being removed with the periosteum, to which it was fixed, a portion of the bone which seemed to be more vascular than usual was taken away with the trephine, so as to expose the medullary canal. The vascularity did not extend more than a quarter of an inch in depth, and the bone was not otherwise altered. The wound healed well, and the man has since continued free from disease.

There can be no doubt that the removal by the knife is far more effectual than any attempts to destroy it by caustics, since the whole thickness of the skin requires to be removed, and the action of caustics is too uncertain to lead to any reliance upon them. Experience shews the same thing with regard to the much smaller tumours producing phagedenic ulcers of the face in elderly persons, which, though sometimes destroyed by the use of caustic, are often irritated, and made to spread with increased rapidity, where the caustic has been insufficient entirely to destroy them.

CASE VI.

I have placed before the Society a preparation, taken from a man whose leg was amputated for this disease in St. George's Hospital, by Mr. Gunning, when I resided there as house surgeon in 1823. The disease originated in the cicatrix of a gun-shot wound, received many years previously. In this case very fair and repeated attempts were made to destroy the disease by potassa fusa, nitric acid, and the actual cautery, but without any avail. I injected the limb after its removal; and the mode of extension by the warty circumference is very well seen, after a more healthy surface had been obtained by one of these means, and it shews the appearance of the disease in its third and last stage, which is as follows.

After the tumour has become solid and prominent, a new action takes place in it, and the tumour ulcerates and sloughs alternately, with a great deal of pain and suffering, and it is destroyed down to its basis, so as to present the appearance of a foul excavated ulcer, except in its circumference, where the skin is raised, thickened, and everted, and from time to time warts are generated, which again ulcerate and slough, till the patient becomes gradually worn out by suffering, but without having at all the sallow and peculiar aspect of a person dying of a malignant disease; and on examination of the body, no disease of the absorbent glands is found, nor is

there, as far as I know, any sign of malignant disease in the interior of the body. This termination of the disease I witnessed in the following case.

CASE VII.

James Sturgess, æt. 34, was admitted into St. George's Hospital, under my care, January 18th, 1832.

Sixteen years previously he had a severe burn of the back, the cicatrix of which extends from the sacrum to the scapulæ, which remained quite well till about eighteen months since, when what he calls a small pimple appeared, which he picked off, and an ulcer formed, which has gradually extended to the present time. On his admission, the tumour, which previously existed, had disappeared, and an excavated ulcer, about eight inches by six in diameter, was left in the loins, the margin of which excited my suspicions at the time he entered the hospital, and the nature of the disease was soon manifested by the formation of warty projections on the skin.

It is unnecessary to occupy the time of the Society with a detail of the internal and external treatment which was adopted, since temporary amendment only was produced in the appearance of the sore, and only some alleviation of his sufferings. The ulcer was too large for excision, and it gradually spread till it was nearly-eighteen inches in its long diameter, and ten or twelve in the other direction. He died,

exhausted with symptoms solely of irritation, on July 11th. Even when of this immense size, however, the disease had in no part destroyed the fascia of the back, and, except in one or two places where the sloughing had been most severe, the cutaneous basis of the disease still remained, though very thin.

I shall be glad if the remarks I have thus presented to the Society, enable any surgeon to recognize this disease in its early stage, when it may be removed by the knife, without wasting time in the use of remedies, which seem to exert no substantial influence over its growth, and, if unsuccessful, will do much harm. The excision of the tumour, or warty ulcer, may thus prevent the necessity for the amputation of a useful limb, as in several of the cases I have related, or prevent the patient from being worn out by a disease that might have been eradicated, while its size still allowed of the operation.

If, again, the surgeon has dissected out such a tumour, or has removed a limb, when the tumour was too large to admit of separation, still it will be a great point to quiet his own and his patient's anxiety by a confident assurance that the disease is not in the least malignant, as cancer is malignant, but is on the contrary entirely local in its origin, and does not contaminate even the adjacent parts, except in a very trifling degree, so that no future mischief need be apprehended.

31, Half-Moon Street,
Dec. 7th, 1833.

A CASE
OF
ABDOMINAL TUMOUR;

WITH THE
APPEARANCES ON DISSECTION.

BY JOHN HOWSHIP, Esq.

LECTURER ON SURGERY IN THE MEDICAL SCHOOL AT THE CHARING-
CROSS HOSPITAL, AND SURGEON TO THAT HOSPITAL.

READ 14TH JANUARY, 1834.

THE subject of this case, C. D., a coachman, aged 70, came under my care July 3, 1830, with hæmorrhage from the bladder. He said that about a twelvemonth since he first had bleeding from the urethra; and that it would now and then last three or four weeks, but nothing to signify, or to weaken him.

He stated that last June it came on, without any cause that he knew of, to much the same extent as at present, and continued for six weeks. He was then in St. George's Hospital, and was relieved. Within the last three days it had returned, with a desire to pass water, almost every quarter of an hour, night and day; generally only a little blood flowing, of a bright red colour; sometimes urine with it, which he knew by the quantity; and in the latter case he became easy for an hour or two. I found the whole

quantity of fluid voided from the urethra within the last twenty-four hours (about three pints) contained a proportion of blood, apparently arterial, forming a considerable red sediment, but no coagulum. He said he never had stricture, nor had ever suffered from gravel.

On examining per anum, the prostate gland was not very distinctly enlarged, but felt indurated, and under moderate pressure gave a sharp shooting pain. I directed the bals. copaib. m. xx. ter die.

February 10. The medicine directed, which he recognized as the same he had taken at the Hospital, had again cured his complaint; the irritation had left him, and the bleeding had ceased.

May 29. Still complaining; he was much distressed by constant tenesmus, and prolapsus ani; with very great frequency in passing water; through the day he said that he always was wanting, and frequently could pass none, but in the night he suffered less.

September 13. He said he was less purged than lately, but was often moved twenty times a day, still. On examining, I now found the prostate apparently presenting an even indurated surface, towards the rectum, to some distance up, beyond which, at one point, a tuberculated projection, somewhat sensitive, was felt; and as far as the finger could reach, to the right and left, it gave the impression of the extended

surface either of a tumour, or the indurated parietes of a diseased bladder.

The urine, he observed, passed pretty easy, six or eight times in the day; it did not always come, when he wanted, but was very easy in passing when it did come.

September 15. All the feelings much improved, by an opiate at night.

September 27. Constant and urgent tenesmus, obliging him, he said, to get out of bed a dozen times a day, frequently without passing any thing; yet the moment he was in bed, his urine, and with it sometimes a loose stool, would come suddenly away, without any power of restraint, or even consciousness of the accident; and this state of bowels continued, in spite of aromatics and opiates.

September 30. I this day examined, for the first time, a large rounded, elastic, and apparently encysted tumour, situated in the left side of the cavity of the abdomen; extending nearly to the cartilages of the ribs above, and to the margin of the pelvis below, and attached evidently to the posterior parietes. I had heard him mention, once or twice, the swelling in his side, but having known he had an inguinal hernia, I concluded it was this to which he alluded.

This tumour in the abdomen had been forming, it

appeared, for the last eight or nine months, and was at first very uneasy, inducing aching and acute pains, in the left leg and thigh. When he lay down in bed, the violence of these pains formerly were alleviated, but latterly not. He said he had never felt the swelling in the abdomen heated, or throbbing. The leg and thigh were now entirely lame and helpless, with continual pain; though less in bed than sitting up.

October 13. The night before last, violent and acute pain came on in the tumour, inducing delirium, with loud moans; and so continued all yesterday. The bowels had previously been excessively relaxed, the involuntary stools flowing from him as often as he moved; but on the accession of aggravated pain in the tumour, the relaxation ceased. He complained of continued and distressing pains in and about the side, where the tumour, much enlarged, now extended itself two-thirds across the abdomen. The pulse was 100, small and weak. On examining by the rectum, Mr. I. C. Turner observed that he distinctly felt the indurated coats of the bladder, beyond the prostate gland, which was somewhat enlarged.

In examining the anterior part of the abdomen, I could now trace the pulsation of two rather large arteries crossing from right to left, over the front of the tumour; and as I had frequently perceived the passage of flatus through a portion of intestine, which appeared to pass down the left side of the swelling, and as I found both vessels were continued from one

trunk on the right, it seemed probable they were branches of the mesenteric artery passing over to the attached portion of the gut.

Oct. 15th. I received a note from his daughter, saying that he was much worse, and had not been expected to have lived through the night; that his senses wavered much, and that the swelling in his side was severely painful. On visiting him, I found him sinking under increasing irritation.

Oct. 24th. He died.

On opening the abdomen, I found the large tumour occupied more than half the space of the abdominal cavity; principally upon the left side. It appeared to be seated upon, and attached to the spine. The piece of intestine passing down upon its left side, was the sigmoid flexure of the colon; the inferior layer of the mesocolon with its blood-vessels forming the anterior covering of the tumour, the superior lamina with the adjacent peritoneal lining of the abdomen, its superior investment, The tumour, therefore, situated on the lumbar vertebræ, had in its growth progressively separated the two laminæ of the mesocolon, until the surface of the large tumour was eventually brought into contact with the displaced portion of the intestine, which, removed from its original situation in the left loin, was brought before the tumour nearly to the front of the abdomen. This tumour, which proved

to be encysted, measured, from above downwards, as it lay in the abdomen, eight inches; its circumference, subsequent to removal, being nineteen inches.

The interstitial substance of the liver, was in various parts found to be occupied by medullary tubercles; some the size of a cherry, others large as an orange; so as to elevate the peritoneal surface. The texture of the gland, in the intermediate spaces, was, however, apparently sound.

The stomach, bowels, kidneys, pancreas, and spleen, were free from disease; but the bladder and rectum appeared to be greatly embarrassed, by a large mass of morbid structure, which occupied the principal space, and especially the back part, of the cavity of the pelvis. This was the consequence of a very extensive deposit of medullary or fungoid matter, in the cellular tissue, behind the peritoneum lining the sacrum, and cavity of the pelvis, and consequently surrounding and involving all the great vessels and nerves.

Desirous of ascertaining, still further, the state of a disease the precise limits of which were not yet traced, I detached the entire mass of the pelvic and abdominal viscera; and having a person with me on whom I could depend, he, with a dexterity peculiar to himself, succeeded in conveying the whole away, unobserved.

The following day, I carefully injected the viscera

with size and vermilion, and then examined them. The large tumour, moderately vascular, contained several cysts, communicating with each other; it was filled partly with a thick purulent matter, but principally with a grumous bloody fluid. The external parietes of this tumour, strong and compact, were about one-eighth of an inch in thickness.

The medullary mass enveloping the large vessels and nerves within the pelvis, was in most parts moderately vascular; its principal thickness from the concavity of the sacrum forwards, was about three inches, where pressing against the posterior part of the urinary bladder, it had induced disease in its coats, forming a broad cushion, with a highly vascular and hæmorrhagic surface, intruding itself into the cavity of the bladder.

The prostate gland was scarcely enlarged, but in making a section through its substance, I found it to be the only instance I had ever examined, in which that body had undergone a complete conversion into a substance perfectly resembling cartilage, in its colour, consistence, and apparent texture.

The coats of the rectum were free from disease, as its course was from mechanical obstruction. The intestine had been pressed towards the right side, so as to allow the increasing medullary deposit towards the back of the pelvis, to reach the bladder,

without interruption to the passage through the bowel.

The liver exhibited to much advantage the structure of fungoid tumour of that viscus; as an interstitial albuminous deposit, in its substance; continuing to increase during the progress of the disease. The capillary vascularity was more remarkable towards the circumference, the central portion of the tumour being more scantily supplied with blood, as demonstrated by the fine arterial branches filled with injection. On the peritoneal surface, the flattened convexity produced by the growth of the larger masses, exhibited many well-injected capillaries passing over the circumference of each tumour, the central portion colourless, and destitute of blood-vessels.

The state of the bladder, just described, proves satisfactorily the source of the repeated hæmorrhage that took place during life, and explains at the same time why, as a bleeding from capillary vessels, the bals. copaib. succeeded in restraining it.

The only remaining point, and the most curious circumstance of any, regards the large tumour; upon which a question at once suggests itself, as to its original seat. Looking upon so large a cyst as the specimen now before the Society presents, it would scarcely be suspected, that it was only one of the lumbar absorbent glands; although that it was so, is

a fact proved not only by the particular situation in which it was found, but also by the detection of several other glands of the same cluster in an earlier stage of a similar disease ; two of which, removed with the mass, still remain attached to the large tumour.

A considerable portion of the liver, I presented as a specimen of fungoid disease, to the College, for the Hunterian Museum ; reserving sections of the tumours in the liver, the diseased bladder, and the large encysted tumour, for my own collection, which specimens I have now the honour to submit for the inspection of the Members of the Society.

Saville Row,
December 7th, 1833.

CASE
OF
PULMONARY PHLEBITIS.

BY ROBERT LEE, M.D. F.R.S.

PHYSICIAN TO THE BRITISH LYING-IN-HOSPITAL, AND SAINT MARY-
LEBONE INFIRMARY; LECTURER ON MIDWIFERY AT ST.
GEORGE'S HOSPITAL.

READ JANUARY 28TH, 1834.

MARY ASH, 20 years of age, was delivered of her first child in the Lying-in Ward of the Parochial Infirmary of St. Martin's, on the 30th November, 1833. The labour was natural, and for five days she seemed to recover in a favourable manner, when a severe rigor took place, which was followed by profuse perspiration, dyspnœa, pain in the left side of the chest, and over the surface of the abdomen, accompanied by a rapid pulse. Soon after the attack, blood was drawn from the arm, and from the hypogastrium by leeches; calomel, opium, and cathartics were administered, with temporary relief of the symptoms. The difficulty of breathing and pain in the chest, however, soon returned, with diarrhœa, and deep-seated pain in the region of the uterus. Until the 29th December, when death took place, the pulse varied from 120 to 150, and she had every day two severe paroxysms of cold shivering, followed by profuse perspiration. During the last two weeks of her life,

little uneasiness was experienced either in the thorax or abdomen, but there was cough with mucous expectoration. This patient was under the care of Mr. Gosna, Surgeon to the Parochial Infirmary of St. Martin's, who furnished me with the preceding report, and by whose exertions I obtained permission to inspect the body after death.

Inspection. The uterus had undergone the reduction of volume usually observed a month after delivery, and no morbid appearance was at first discernible in any of the abdominal or pelvic viscera. On slightly drawing up the uterus toward the brim of the pelvis, the fimbriated extremity of the left fallopian tube was seen adhering by lymph to the back part of the body and cervix of the uterus, and in the folds of the broad ligament near the left ovarium, an abscess about the size of a walnut was observed. On the left side, the veins of the cervix and body of the uterus were all gorged with purulent fluid, and lined with thin ash-grey coloured false membranes; in the muscular tissue of the anterior part of the cervix uteri, was a small sloughy abscess. The left obturator, and the uterine branches of the internal iliac vein, were filled up with a soft yellowish coagulum of lymph, which adhered to the inner coat of the vessel, and contained pus in its centre, and was continued downward along the external iliac, terminating abruptly a little above Poupart's ligament. It also extended upward about half an inch into the common iliac, and terminated in a loose blunt point. A firm clot of

dark-coloured blood, which did not adhere to the lining membrane, filled the greater part of the remaining portion of the common iliac vein. Near the termination of this vessel, a coagulum of lymph, similar to that in the external and internal iliac veins, existed, which closely adhered to the inner membrane, and passed into the vena cava.

The whole vena cava, between its commencement in the common iliac and the entrance of the hepatic veins, was lined with a soft, yellowish-coloured pultaceous mass of lymph and pus, which adhered, in some parts loosely, and in others firmly, to the internal tunic of the vessel. The entrance of the right spermatic vein into the vena cava was closed with a firm false membrane, and the coats of the vena cava, above and below, were twice their natural thickness. The greater portion of the right spermatic vein was lined with dense false membranes of a bluish colour, and its coats were thickened and contracted.

The serous surface of the middle and inferior lobes of the lungs on the right side was covered with soft, yellow lymph, and their substance was hepatized. On cutting into the left inferior lobe the pulmonary texture was found dense, and of a dark red colour; and pus escaped from two branches of the vein, which traversed this portion of the substance of the lung. On careful inspection of the venous trunk and branches of the left inferior lobe of the lungs, all the appearances usually seen in inflammation of

veins in other internal organs of the body were observed. The trunk of the vein, near its entrance into the left auricle of the heart, was found plugged up with a soft, yellowish-coloured clot of lymph, firmly adherent to the inner surface of the vessel, and extending into several of its principal branches in the substance of the lung. The coagulum of lymph on the outer surface was of a bright scarlet colour, when separated from the vein. The smaller branches of the vein, into which the solid lymph did not extend, were filled with pus, and in some parts were coated with a delicate layer of yellow lymph.

Inflammation of the pleura and pulmonary texture is well known to be one of the most frequent and fatal consequences of uterine phlebitis; but inflammation of the veins returning the blood from the lungs to the left side of the heart, is an affection which has scarcely, if at all, attracted the observation of pathologists. The preceding is the only example of the disease which has yet fallen under my notice.

14, Golden Square,
January 20th, 1834.

OBSERVATIONS
ON
ULCERATION
OF THE
CARTILAGES OF JOINTS,
AND ON
ANCHYLOSIS.

BY HERBERT MAYO, F.R.S., ETC.,
SURGEON TO THE MIDDLESEX HOSPITAL.

READ MARCH 25TH, 1834.

IN a valuable paper by Mr. Key on the ulcerative process in joints, published in the eighteenth volume of the Medico-Chirurgical Transactions, two opinions are maintained. One is, that ulceration of cartilage is more frequently dependent on inflammation of the synovial membrane than it is commonly supposed; the other is, that the inflamed synovial membrane is the agent by which cartilage is absorbed, or that cartilage is not so organized as to be capable of self-absorption, as the vascular tissues are, but when appearing to ulcerate, is acted on and taken up either by the capsular synovial membrane, or by a false membrane superadded to the latter, with one or other of which the cartilage is in contact. The first of these opinions is borne out by my own experience;

the second is opposed to the authority of Dr. William Hunter and of Mr. Brodie, and is at variance with facts which will be stated in the present paper. My principal object, however, in the present paper, is not to multiply proofs of vital forces being inherent in cartilages, but to establish certain pathological differences, which I believe to have been overlooked by others, in ulcerative diseases of joints. With this purpose, I shall describe several cases and dissections which have fallen under my observation. They tend to shew that articular cartilages are liable to three distinct forms of ulceration, or exhibit three varieties of ulcerative disease, which, although they may be occasionally combined, are oftener met with separately.

The cases which I shall first describe, are instances of rapid absorption of cartilage beginning on its synovial aspect, the new surface, if of cartilage, being smooth and unaltered in structure; if of bone, healthy; the absorption of cartilage being attended with inflammation of the capsular synovial membrane.

The second series will exemplify chronic ulceration of cartilage beginning on its synovial aspect, producing an irregularly excavated surface, with fibrous or brush-like projections of the cartilage and synovial membrane, attended with inflammation of the capsular synovial membrane, and sometimes of the same membrane where it is reflected over the cartilage; the bone and the surface of cartilage towards it being healthy.

The third are instances of ulceration of cartilage beginning on the surface towards the bone, attended with inflammation of the adjacent surface of the bone, with inflammation of the synovial membrane, and in some instances with sensible vascularity of the cartilage itself.

Of these three classes, the second alone appears to me to have been fully treated of by Mr. Brodie, in his well known work upon the joints. The first does not seem to have attracted his attention as a separate form of disease; and the third he has not, I think, sufficiently distinguished from scrofulous affections of the articular ends of bones.

I.

“ Cases of rapid absorption of cartilage beginning on its synovial aspect, the new surface, if cartilaginous, being smooth and unaltered in structure; if of bone, healthy; the absorption of cartilage being attended with inflammation of the capsular synovial membrane.”

A young woman was admitted into the Middlesex Hospital in the summer of 1829, four or five weeks after her confinement, in a state of great emaciation, with a large abscess below the fascia of the thigh, extending from the knee more than half way to the groin. The abscess did not communicate with the joint, which contained no fluid, but was contracted; the tibia was drawn backwards upon the condyles

of the femur. In six weeks this patient sank and died.

Upon examining the knee-joint, the cartilage of the condyles of the femur was found to be entirely absorbed towards the edge, the bone exposed being healthy. The cartilage covering the condyles at other parts was uniformly attenuated, but smooth, and strongly adherent to the bone, which was healthy.

The capsular synovial membrane was inflamed and thickened, and a fine film of false membrane extended over the whole surface of the condyles, being the agent through which, upon Mr. Key's hypothesis, the superficial absorption of the cartilage had taken place. The patella was ankylosed to the femur, a thin layer of cartilage intervening between the two bones.

The preceding instance belongs to a class of cases which I described in the eleventh volume of the *Medico-Chirurgical Transactions*. Of these cases, the only one of which I had then obtained a dissection, was the following.

A boy fourteen years of age died in the Middlesex Hospital of *hernia cerebri*, three weeks after a fracture of the skull. He was perfectly well till the accident. Four days after its occurrence, a joint of one finger and one ankle-joint became swollen and painful. The swellings suppurated, and were opened.

On examination of the parts after death, the abscesses were found to have no communication with the neighbouring joints. The joints contained no fluid. The capsular synovial membrane of each was inflamed and thickened, but neither fringes nor productions of false membrane stretched between the articular surfaces of the bones. The cartilages were, however, partially absorbed, and in each joint with the same character. The cartilage of the under surface of the astragalus had become so thin as to be semi-transparent; the layer which remained was smooth, of the natural texture, and firmly adherent to the bone. The cartilage upon the tibial aspect of the astragalus was nearly wholly absorbed; patches only were left at the extremities of the upper and lateral edges, which were smooth and firmly adherent to the bone. The exposed surface of the astragalus was healthy.

The upper surface of the astragalus is represented in Plate I., fig. 1.

It is certain that in this case the absorption of the cartilage must have taken place through the vessels of the cartilage itself.

In the paper to which I have referred, two other cases are described, which appeared to be of the same nature, and in which the patients recovered with ankylosis of the affected joints. In one the joint diseased was the knee, in the other the elbow. It happened that some years afterwards the second patient

died under circumstances which enabled me to examine the elbow-joint which had been affected. I found in it, as I had anticipated, bony ankylosis between the humerus and ulna. The cartilage having been absorbed, healthy surfaces of bone came into contact, between which union had taken place.

Cases like the preceding are of rare occurrence. The absorption of cartilage takes place rapidly. It is attended with severe pain, with inflammation of the capsular synovial membrane, and generally with suppuration in the cellular tissue adjacent to the joint. The only favourable termination of the disease that I have witnessed, has been ankylosis.

II.

“ Cases of chronic ulceration of cartilage beginning upon its synovial aspect, producing an irregularly excavated surface, with fibrous or brush-like projections of the cartilage and synovial membrane, attended with inflammation of the capsular synovial membrane, and sometimes of the same membrane where it is reflected over the cartilage ; the bone and the surface of cartilage towards it being healthy.”

To exemplify the connexion between this form of disease and inflammation of the synovial membrane, I shall give two instances, the first of which might be viewed as evidence in favour of Mr. Key's hypothesis. The second, however, contravenes it. The second case likewise presents some peculiar features, and a

character of much acuter suffering than commonly attends the disease.

Mary Cole, ætat. twenty-seven, was admitted into the Middlesex Hospital, January 16, 1834. The left knee was nearly motionless through ankylosis of the patella to the outer condyle; it was swollen, but in a trifling degree. The position of the knee was nearly straight. When the limb was at rest, she was generally free from pain, which, however, was invariably brought on by motion or pressure. The complaint had commenced a year before, and she attributed it to an accident; her foot had slipped through a hole in the floor, and the joint might have been strained. But three months elapsed between the occurrence of this accident and any symptom which she distinctly remembered. The joint at that period became suddenly swollen and painful. Leeches, cupping, fomenting, blisters, and an issue were used, which in four months had nearly removed the pain and swelling, when she accidentally fell and struck the knee. The symptoms immediately returned with aggravation, and the knee was drawn into a semiflexed position. The treatment which had before been of service was again resorted to successfully: after persevering in it for some time, bandaging with mercurial ointment was used. The knee became nearly free from pain, and straight, but the joint was useless.

She now ventured to walk, when the pain, which had never wholly gone, increased. Soon after this

period, she came into the hospital. A few days after her admission she was taken with erysipelas, and died.

Upon examining the diseased joint, bony ankylosis was found to have taken place between the patella and outer condyle. The inner half of the cartilaginous surface of the inner condyle was ulcerated; the ulceration was shallow, the excavated surface was irregular, and uneven rather than rough. It had the appearance of being a surface that, having been ulcerated in the former attack, had subsequently healed. The capsular synovial membrane was inflamed and thickened, especially at the front of the joint, and a layer of false membrane partially covered both condyles.

Jane Dean, ætat. twenty-seven, was admitted into the Middlesex Hospital, June 18, 1833. The preceding April, the lower outer and anterior part of the left knee became full and painful, which she attributed to cold from kneeling upon the stones. Cupping, poultices, and a liniment were used. The slight fulness went away, but a pain, which she had felt from the first, deep in the joint, now increased. The application of a blister mitigated the pain for a time; afterwards, cupping twice repeated, leeches, and the use of a cold embrocation, had nearly removed the pain, when upon using the joint in walking, the symptoms became aggravated.

At her admission, but for a slight fulness towards the

outside of the ligament of the patella, the knee had the appearance of being free from disease ; but she was never without throbbing pain under the knee-pan, which was increased by motion or pressure. The position of greatest ease was very slight flexion of the joint. There was no mechanical impediment to complete flexion or extension.

From the 18th of June, the period of her admission, to the 7th of February following, when the limb was amputated, this patient, with one brief intermission, became progressively worse. The pain during the last two months was nearly insupportable, and she obtained very short intervals of broken rest at night through large doses of laudanum alone. The pain in the knee did not alter its place or character, but latterly, in combination with a sense of violent throbbing, the patella felt as if lifted up. The leg wasted ; the ankle and instep became œdematous. The slightest touch on the knee aggravated the patient's suffering.

Many remedies, in the mean time, were ineffectually used ; leeches, cupping upon the knee and upon the loins, blisters, caustic issues, tartar emetic ointment, hot fomentations, steaming, ice, opium with calomel to touch the gums, belladonna and the acetate of morphia applied to a blistered surface, mercurial ointment and bandaging, bandaging to a light splint to prevent motion, carbonate of iron, arsenic, colchicum, iodic, and an intermission of all remedies, were in

succession tried. Of the means described, the only one which produced a marked effect was constant hot fomentation; there was a week, during the early period of her illness, when the pain was materially lessened by this means. The application of ice, and of pressure with mercurial dressings, were discontinued as soon as tried; they aggravated the symptoms. Of the other remedies, each, when first tried, appeared of service, and afterwards became wholly nugatory. During the last two months, any local treatment invariably produced an aggravation of pain.

Upon examining the knee-joint, which was previously injected, the capsular synovial membrane was found highly vascular, but not thickened. Upon parts of the cartilage of the patella, of the inner condyle of the femur, and of the semilunar cartilages, the vessels of the synovial membrane were filled with the injection. Upon the patellar surface of the inner condyle, the cartilage was superficially absorbed for a small extent, presenting the characteristic excavation and fibrous or brush-like processes. The synovial membrane adjacent to this, and, which is singular, that covering a part of the ulcerated surface, were highly injected. (These appearances are represented in Plate I., fig. 2.) The texture of the cartilages of the joint was otherwise natural, and their adhesion to the bone perfect. But they had a slightly greenish tinge, which contrasted with the clear blueish whiteness of the cartilages of the ankle-joint.

The following case, in which the patient has nearly recovered, bears a great resemblance to the first of the two which have been last narrated.

Elizabeth Higgin, ætat. thirty, was admitted into the Middlesex Hospital in August, 1833. The right knee was a little swollen, but the synovial cavity was not distended with fluid; the knee was slightly bent, the tibia was retracted, and the foot everted. The knee was hot and painful; the pain was seated in the front of the knee, and became increased on motion; when the patella was moved upon the condyles, some roughness was indistinctly felt. The tongue was white, the pulse frequent, the skin dry and heated. The complaint had commenced ten weeks before, with fever, and pains in the limbs generally, and pain with swelling in the knee; the pain lay on each side of the patella. The knee continued to swell during the first fortnight; from that time till her admission, it had been getting better. A few leeches were applied, and the joint was fomented at the commencement of the attack, without influencing in any degree its progress. Afterwards, two blisters and the ointment of tartarized antimony had been prescribed, from which sensible relief was experienced.

Upon her admission, leeches and hot fomentations were ordered, the diet regulated, and opening medicine with calomel given. Afterwards, caustic issues were made on each side of the patella; the knee was bandaged to a splint having a joint capable of exten-

sion by means of a screw. The patient is now nearly recovered. The pain and swelling are quite gone; the skin has its natural hue; ankylosis has taken place between the patella and femur; the position of the joint is very slight flexion. The recovery of this patient has been occasionally interrupted by sudden increase of pain and heat, which has in each instance been relieved by local blood-letting.

III.

“ Cases of absorption of cartilage beginning on the surface towards the bone, attended with inflammation of the adjacent surface of the bone, with inflammation of the synovial membrane, and sometimes with sensible vascularity of the cartilage itself.”

Eliza Devonport, ætat. 20, was admitted, November, 1833, into the Middlesex Hospital. Three years previously her left elbow-joint had been attacked with pain and swelling, which, being treated with leeches and embrocations, went away in nine months. Shortly after her recovery, the left knee began to swell at the lower and fore part; the swelling was attended with pain, which, although constant, was severe at times only: she thought it rheumatism, and wore flannel round the joint. A year before her admission the disorder in the knee became more serious; at times it confined her to her bed. The joint was hot, stiff, and painful; several blisters were at this period applied in succession

with some advantage. Leeches, fomentation, cold embrocations, bandaging, were tried, but were of no service.

At the time of her admission into the hospital, and for a month previously, she had been suffering the acutest pain; which the least pressure or motion aggravated to intolerable intensity. The knee was hardly or very slightly swollen; it was a little bent. There was no impediment to further flexion but the pain which it gave. The pain was severest beneath the patella; it extended, however, along the leg and thigh. Having tried local bleeding, fomentation, a large caustic issue, and opium, without any mitigation of her intense suffering, I amputated the limb. This patient recovered, and is well.

Upon opening the knee-joint, which had not been injected, a tea-spoonful of thin yellowish synovia escaped. The capsular synovial membrane was inflamed and thickened, and presented a jelly-like granulated surface, which extended a little way over the cartilages of the condyles. The cartilage was partially ulcerated on its synovial surface, both upon the femur, patella, and tibia. Near the crucial ligaments, for the extent a sixpence would cover, the synovial surface of the cartilage, on the inner part of the tibia, was softened and rendered semi-transparent for two-thirds of its thickness.

More serious disease was found between the

cartilages and the bones. When the cartilages were cut through, either half could be easily torn from the bone. There were parts indeed at which a complete discontinuity of substance appeared to have existed, the surface of the cartilage being irregularly excavated, and the corresponding surface of the bone ulcerated and extremely vascular. Elsewhere the cartilage did not come away clean, but tore off with it numerous granules of bone from the surface. This arose from the surface of the bone, for the depth of a line, having been highly inflamed and softened in its texture, so that it gave way to very slight force. Except upon the surface, the bones were perfectly healthy.

Benjamin Cockerell, *ætat.* 15, was admitted into the Middlesex Hospital, in January, 1834. Three years and a half before, he had fallen out of a stable-loft, and struck his knee. The knee swelled, and became stiff and painful, but notwithstanding this he continued to walk upon it for three weeks, during which it became worse. Leeches, fomentation, lotions and blisters, were then used; and in six months, being much relieved, he began again to walk. After a short period, a relapse took place, when the same treatment was gone over again with the same advantage. This recurred more than once. The relapses generally happened in the winter. When at the worst, the knee was not greatly swelled; there was pain all over it; its position of ease was moderate flexion. The sensations in the joint were of shooting, pricking, and throbbing.

The last summer, this patient was for a period better than he had been since the first attack, but at Christmas he again became worse. At the time of his admission into the hospital, the knee was more swelled than ever: the form of the bones was lost through effusion into the joint. Leeches, and fomentation, blisters, and caustic issues, and bandaging over strips of mercurial dressing, were used ineffectually. The limb was amputated on the 12th of March. The boy speedily recovered.

On examining the knee, which had been injected, much lymph was found effused into it, part gelatinous, part an organized false membrane. The capsular synovial membrane was highly inflamed, and thickened.

The marginal parts of the cartilages of the femur, patella, and tibia, had wholly disappeared, leaving rough and highly vascular surfaces of bone exposed. The vascularity of the bone was superficial; its structure, except at the surface, was healthy. The roughness arose from a partial, superficial, and irregular absorption of the crust of the bone for about the depth of half a line. The cartilage which remained was in parts ulcerated upon its synovial surface; in parts was attenuated, through ulceration upon its osseous aspect, which was proved by the synovial surface being perfect at those parts. The adhesion of the attenuated cartilage to the bone appeared to be very slight. Most part of it, however,

did not separate cleanly from the bone, but brought away with it particles of the inflamed surface of the bone. At the posterior part of the inner condyle, the vascularity and softening of the bone extended further, but to no great extent, into its substance. The semilunar cartilages were partially ulcerated, softened, and distinctly vascular.

I amputated the leg of a patient, ætat. 28, for disease of the os calcis and os cuboïdes. The cartilages had disappeared from the opposed surfaces of the two bones. The surface of the os cuboïdes was covered with lymph; that of the os calcis presented in parts its proper hard shell of bone: in parts the shell was ulcerated, and exposed the cancelli, which, to the depth of a third of an inch, were highly vascular.

The surfaces of the astragalus were in an earlier stage of disease, and presented the following remarkable appearances. The tibial and navicular surfaces were not denuded of cartilage; but the synovial membrane covering each was in parts highly injected, and was everywhere easily separable from the cartilage. Upon the middle of the tibial surface, the synovial membrane was so much thickened as to be semi-opaque, and to resemble a thin layer of cartilage. On both of these surfaces, several vascular points were seen; the greatest number were on the tibial aspect. On making sections of the cartilage on this surface, the points were found to be the terminations of nu-

merous vessels, which had pierced the cartilage from the bone. One of these anastomosed with vessels of the inflamed synovial membrane. The bone, with the exception of its surface, was perfectly healthy.

I amputated the leg of a patient, twenty-five years of age, five months after a compound fracture of the tibia and fibula. The bones had united, but the swelling, which had succeeded the fracture, had led to repeated large collections of matter in the calf of the leg, and about the ankle-joint. These had been opened in succession, and the patient had as many times rallied from the hectic fever and debility which they had occasioned. At last there formed above the knee-joint an extensive abscess, which was opened; when profuse discharge, alternately of blood and matter, took place for several days. The limb was amputated too late to save the patient.

The knee and ankle-joints were examined after they had been injected: the appearances were much the same as in the two preceding instances. The bones were sound, all but the surface towards the cartilages, which was highly inflamed. The cartilages were in part entirely absorbed, in parts remarkably attenuated by absorption upon their osseous aspect; at other parts, but to a small extent, ulcerated upon their synovial aspect. The attenuated cartilages appeared to be readily separable from the bone, but when torn off, their under surfaces were found covered with bony particles, shewing that it was the

line of inflamed and softened bone which gave way, not the adhesion of the cartilage to the bone.

The capsular synovial membrane was inflamed, and the cartilage of the patella was partially absorbed on its synovial surface. The appearance of one of the condyles is given in Plate I., fig. 3.

The kind of disease which has been exemplified in the last three cases, is clearly distinguishable from ulceration of cartilage, beginning on the synovial surface. As far as my experience has gone, it is considerably less manageable, but the case of Cockereil shews that it will yield for a time to treatment, though the joint may remain strongly disposed to a relapse. The circumstance which is most against recovery in this affection, is the partial or complete separation of portions of cartilage from the bone, which necessarily prove an additional source of irritation.

These cases again are not less distinguishable from the disease which Mr. Brodie has described under the name of "scrofulous disease of the joints, having its origin in the cancellous structure of the bones." I will give one well-marked case of the scrofulous disease, to throw the class, to which it belongs, into contrast with the preceding.

A child, six years of age, was admitted into the

Middlesex Hospital, for disease of the right ankle-joint. The ankle was swelled to four or five times its natural size. Two indolent ulcers were situated one on each side of the joint, which were filled with pale granulations. A probe, introduced into one of these, passed nearly through the ankle, and grated against osseous tissue. The disease had commenced four months before, and, it was thought, had been occasioned by another boy having trod upon this patient's ankle. The ankle had enlarged slowly, and with little pain. As the boy's health, however, was suffering, the limb was amputated.

The foot was examined immediately after the amputation. On opening the joints about the ankle, the cartilage of the posterior and upper surface of the astragalus was found to have been absorbed, and the cancellous structure within to be soft, and as if rotten, its cells containing a thick, brown fluid. The bony texture of the anterior part of the astragalus was healthy. On making a horizontal section of the os calcis, about a third of the surface appeared healthy: the greater part had the brown and rotten appearance and texture of the diseased os calcis. The lower part of the tibia was in the same state.

Some of the cases which have been referred to throw light upon the process of Anchylosis.

There appear to be three varieties in the mode in

which the ends of bones become united, after partial or complete absorption of their natural articular surfaces.

One is *bony* ankylosis, in which the ends of the bones become united, after the complete absorption of the cartilages and synovial membrane.

A second is *cartilaginous* ankylosis, in which a junction takes place between surfaces, both of which are cartilaginous, but have undergone superficial ulceration.

The third may be called *mixed* ankylosis, in which a surface of cartilage, that has undergone superficial ulceration, is united to a denuded surface of bone.

These distinctions indeed refer to differences, rather in the nature of the surfaces that become united, than in the process of union. In each of the three kinds it may be proved, or rendered very probable, that an exudation of coagulable lymph, adhering to the surfaces which are in apposition, first glues them together mechanically, and afterwards becomes an organized medium of union. The layer of lymph is of very variable thickness.

Complete bony ankylosis had taken place in the elbow-joint of the patient whose case is referred to at the commencement of this paper: the humerus and ulna were united, so as to form one bone, with no

break or line of interruption, or discontinuity of osseous structure.

The commencement of this process was seen in another case. A young man had the leg amputated after a lacerated wound of the ankle. Ten days after the accident, erysipelas had supervened, and matter had formed about the joint: the integument sloughing, an opening could be seen into the fore and outer part of the ankle-joint, the cartilage of which became rapidly absorbed*. The patient suffered severe pain, which he described as gnawing, throbbing pain, with occasional violent shootings through the joint, and a distressing sense of grating when the limb was disturbed. The patient's strength declining rapidly, amputation was thought necessary. The limb was removed two months after the accident. Upon a vertical section being made of the ankle, one common change was found to have taken place in both the joints, which the upper and under surfaces of the astragalus contribute to form. In each of these joints the cartilages had entirely disappeared, and the denuded ends of the bones were joined together by a layer of semi-transparent and organized lymph, from a sixth to a quarter of an inch in thickness. This union by lymph was a step towards union by bone. One circumstance appeared to me of peculiar

* In two other cases which I have witnessed of exposure of the ankle-joint by sloughing after severe injury, the entire absorption of the articular cartilages took place within a month.

interest. The interior of the bones was perfectly healthy, but the surfaces to which the lymph adhered were, for the depth of one or two lines, extremely vascular. They combined with that vascularity the roughness of surface and softness of texture described as found upon the articular aspect of bone in the third kind of ulceration of cartilage specified above. I conclude from hence that bony ankylosis may, under favourable circumstances, take place after that form of ulceration of cartilage, which depends upon inflammation of the adjacent surface of the bone.

To exemplify cartilaginous ankylosis, I may describe a case in which superficial ulceration of the cartilage had taken place upon the opposite surfaces of the femur and patella, and in which ankylosis was in progress, when amputation was rendered necessary by necrosis of one of the condyles.

Mary Logan, ætat. 17, had suffered from childhood with disease of the left knee-joint. It had come on gradually. Three years previously, upon being treated with friction, the joint had become much worse; but it grew better under the use of leeches, fomentation, and blisters. When she was placed under my care, the joint was semiflexed, the tibia retracted upon the femur, the patella ankylosed, the foot everted, the limb wasted: she was suffering severe and constant pain. As her sufferings were

not mitigated by the remedies which I tried, I amputated the limb. She recovered.

The patella was united by cartilaginous ankylosis to the fore and upper part of the condyles. Upon using some force, the union gave way, when it was seen to have taken place between two ulcerated surfaces of cartilage, which were longitudinally, but irregularly and shallowly grooved.

The cartilage of the under part of the outer condyle was entirely removed, and a thick layer of adherent lymph substituted for it; the under part of the outer condyle, from which the cartilage had likewise disappeared, was necrosed to the depth of from half an inch to an inch, and already in process of exfoliation into the joint.

Mixed ankylosis of the patella to the femur had taken place in the first case described in the present paper. This was proved by forcing the patella from the femur, after a longitudinal section had been made of these bones. The patella came away denuded of cartilage, while the layer of cartilage, which was left on the corresponding part of the femur, was not of greater thickness than that on the immediately adjacent surface. The texture of the bones was quite healthy. A thin layer of lymph, or false membrane, which extended over the cartilages of the femur, had the appearance of having spread between the denuded

surface of the patella and the cartilage with which it had been anchylosed.

The preparations, from which the figures are taken, and others which are referred to in this paper, and were shewn when it was read, may be seen in the anatomical museum of King's College.

A CASE
OF
SUDDEN ILLNESS IN ADVANCED PREGNANCY
TERMINATING IN
THE DELIVERY OF TWINS AND DEATH;
WITH AN ACCOUNT OF
A SINGULAR LACERATION
OF THE
PERITONEAL COAT OF THE UTERUS,
AS DETECTED ON THE POST MORTEM EXAMINATION.
BY WILLIAM HENRY PARTRIDGE, Esq.
MEMBER OF THE ROYAL COLLEGE OF SURGEONS, BIRMINGHAM.
COMMUNICATED BY
MR. R. PARTRIDGE.

READ MAY 13TH, 1834.

Mrs. BARR, the mother of six children, was seized about eleven A.M. on Sunday, the 25th of August, (being then in the beginning of the eighth month of utero-gestation,) with abdominal pain, and vomiting of bilious matter. After the lapse of two hours, a watery discharge, mingled with coagulated blood, took place from the vagina. I saw her at three P.M., when she appeared pale, faint, and sunk in countenance, like a person suffering from extreme hemorrhage, though the quantity of blood she had then lost was inconsiderable. As I was apprehensive labour would be the consequence of such continued vomiting, I gave her a dose of opium and enjoined her

strictly to keep the recumbent posture. The sickness continuing, about five o'clock one of her attendants gave her some brandy, which allayed it, but shortly after, labour pains commenced, and about seven I was sent for in haste, and on my arrival, found the patient just delivered of twins; each child enveloped in its proper membranes, with the placenta attached.

The contents of the uterus were expelled by a single violent contraction, which left her much exhausted; and during the application of the bandage the abdomen heaved violently, the impulse forcing the epigastric region remarkably forwards. The pain continued very severe, and I gave her another dose of opium, but without any alleviation of the pain, which increased in intensity till she expired, at a quarter before nine. Rather more discharge than usual had followed the delivery, though less than many women lose with impunity.

On the following day I examined the body, with the assistance of my friend Mr. Ingleby, lecturer on midwifery at the School of Medicine in this town, to whom I am indebted for many of the following remarks.

On opening the abdomen, a quantity of thin dark-coloured blood was found, which amounted to about forty ounces. There were no coagula. The uterus was well contracted, and on its anterior part quite natural, excepting an ecchymosed appearance of the

cellular texture around the tubes and ovaries ; but on the posterior surface a considerable number of transverse lacerations were discovered, all more or less curved in form, with the convex part towards the fundus, averaging from half an inch to two inches in length, and varying in depth ; some were mere fissures, as though made by a penknife. One was particularly large, measuring three inches in length, and nearly two in breadth in its centre. A flap of detached peritoneum had fallen down, and the raw and fibrous structure from which it had been torn, was exposed as completely as it could have been done by the most careful dissection. The immediate cause of death was probably exhaustion from internal hemorrhage and intense pain.

With respect to the delivery, two explanations are suggested. First, that the violent vomiting may have detached the placenta, and occasioned the discharge of blood which was noticed at the end of the second hour, and that thus, as frequently happens, the uterus may have been stimulated to action ; for so long as its fibres are not deprived of their power, any effusion of blood, whether it escapes per vaginam or is contained within the uterus, tends to produce uterine contraction. Secondly, that the direct exposure of the uterine fibres by the detachment of the peritoneum may have excited the parturient action ; a supposition not improbable, and in support of which it may be recollected that the pain continued severely until shortly before dissolution. Rupture of

the uterus, the most fatal of all injuries incidental to parturition, generally includes the whole of its textures; occasionally, though but rarely, the fibrous coat alone gives way, and the peritoneum remains entire; and still more rarely, (at least as far as examination has at present shewn,) the peritoneum is lacerated, leaving the other structures but little injured.

Upon what does this peculiar laceration depend? Upon mere distension, with or without the application of force? Upon disease of its texture?—or upon some unnatural arrangement of the fibrous structure of the uterus? In the present instance, I should rather suspect the first mentioned cause; partly on account of the peritoneum appearing healthy, but principally from the uterus containing twins, and the circumstance of no sensible contraction having preceded the mischief. From the suddenness of the seizure, it might be supposed that the peritoneum gave way spontaneously, producing the pain, the internal effusion, and subsequently the vomiting and syncope; but it is difficult to comprehend how so extensive a detachment of peritoneum as was observed in the principal laceration could be occasioned independently of a force suddenly exerted. If we consider the attack to have been bilious colic, a complaint which was prevalent at the time, may we not reasonably suppose that the sudden and forcible pressure of the abdominal muscles upon the anterior surface and fundus of the uterus, during the act of vomiting, would occasion a propulsion of its contents to-

wards its posterior part, and produce an extraordinary degree of tension in the peritoneal covering of that portion, bound down as it is to the sacrum by the broad posterior ligaments. The numerous cracks or fissures occurring in a transverse direction, shew that a great distension had taken place previous to the occurrence of the larger rent, and if we call to mind the situation of the uterus in an advanced stage of pregnancy, (the fundus being then the most projecting part, and the posterior surface being comparatively but little supported during the act of vomiting,) we have some explanation of the cause of the laceration occurring on the posterior surface. Still I am aware this view is not quite satisfactory; for in a case of rupture of the uterine peritoneum, related by Mr. (now Sir) Charles Mansfield Clarke, in the third volume of the Transactions of a Society for the Improvement of Medical and Chirurgical Knowledge*, and in another, mentioned by Dr. John Ramsbotham, in his "Practical Observations in Midwifery," Part I. p. 409, (the only two cases of this accident on record †,) very similar fissures and lacerations occurred, where no vomiting is reported to have taken place.

Sir C. M. Clarke's case differs from this in several points. In the former, the symptoms did not arise till two hours after labour had commenced, and some dilatation of the os internum had taken place. The principal laceration was less extensive, the effusion

* A Plate accompanies the Case

† See postscript at the end of this paper.

did not exceed an ounce or two, and death took place before delivery, and after a much shorter period of suffering. Sir C. M. Clarke does not attribute the lacerations to distension, from the fact of the uterus never being full at any period of pregnancy; but may not the peritoneum be greatly distended, whilst the uterine textures remain comparatively soft and yielding? With the increasing size of the uterine vessels, the tissue in which they ramify becomes progressively softer, until the fibres begin to shorten; but no such provision is made for the peritoneal investment, and since it possesses but little elasticity, it is a reasonable inference, that a material extension of this membrane may produce a breach of continuity.

Interesting as these cases are, they possess but little value in a practical point of view. An injury of this nature can only be suspected before death, and even if it could be certainly known, it must be irremediable. They however strongly prove the importance of making post mortem examinations in all cases of sudden death connected with parturition; for not only may the public ignorantly censure the medical attendant, but if an investigation be withheld, he may actually reproach himself, for the fatal termination of a case which is altogether beyond the reach of human foresight or human skill.

POSTSCRIPT.

Since writing the above, I have met with accounts of two other cases of rupture of the peritoneal coat

of the uterus, which were followed by death. In both, however, some part of the fibrous structure of the uterus was lacerated. The first case is related by Mr. Chatto, in the London Medical Gazette for 1832, p. 630. The woman was twenty-eight years of age, and in labour with her sixth child. The pains were very irregular; sometimes moderate and at others vehement, and occasionally ceasing altogether. The patient became restless, pale, the pulse very languid, and there occurred some flooding. At length the os uteri becoming dilated, the membranes being tense, the presentation natural, and the pains continuing irregular, Mr. Chatto ruptured the membranes; and then a few pains slowly following each other, fully dilated the parts, and brought the child's head into the pelvis. The pains after this again becoming slight and intermittent, a scruple of the *secale cornutum* was administered, which produced uterine action until the child's head was born; the pains then ceased for fifteen minutes, when they again returned, and the child, together with the placenta, were expelled, the pains continuing for some time after. The uterus contracted completely, and the bleeding did not recur. Shortly after delivery the woman became pale, depressed, almost pulseless, and was subject to frequent and severe jactitation. Six hours after delivery she died. Upon examining her body on the following day, a large quantity of blood was found effused into the cavity of the abdomen. The uterus was firmly contracted, and posteriorly, near its fundus, was found ruptured to a

considerable extent. The surface of the rent was covered with portions of coagulum : it occupied a space perhaps as large as a crown-piece, but of irregular margins, and surrounded by a reddish stain, giving it, at first view, the appearance of having resulted from ulceration. Near this breach were three or four smaller cracks in its substance. Upon cutting into the cavity of the uterus, it was found that the rupture had not extended into it ; the lining membrane being entire throughout ; and indeed a considerable portion of the muscular substance intervened between it and the external rent, which perhaps had not penetrated more than two-thirds through it. The uterus seemed sound in all other parts of its structure. The surface, whence the placenta had been detached, looked as usual, and was some slight distance removed from the situation of the rupture.

The next case is related by Mr. White, in the *Dublin Journal of Medical and Chemical Science*, for July, 1834, p. 325. The patient was thirty-two years of age, and the mother of eight living children. When nearly at the full period of utero-gestation of her ninth child, being frightened, she turned quickly round, and was immediately seized with pain in the lower part of the back and abdomen, attended with faintness and palpitation of the heart. From these symptoms she recovered, seeming only more pale and languid than usual. Eight days afterwards she was attacked with darting pains in the lower part of the abdomen, she became agitated, pale, and ghastly, had

difficult breathing, pain about the heart, and a quick and fluttering pulse. Some hours afterwards labour came on, and after a few feeble uterine pains the patient was delivered of a full-grown, still-born male child ; but in less than three-quarters of an hour she gradually sunk and expired. When the body was examined, "considerable serous effusion was found in the right side of the chest ; on the left there were adhesions of the pleuræ and some effusion : the structure of the lungs healthy, the heart empty, its walls flaccid, and valves of the arteries natural." "On opening the abdomen, a large quantity of fluid blood was found in the vicinity of the uterus, the broad ligaments of which were injected with blood ; the uterus had not contracted, the right ovarium was much enlarged, and contained two hydatids of considerable size ; on the anterior surface of the uterus were *two long lacerations*, and *one of smaller size through the peritoneal coat*, and also through a few superficial fibres of the uterus, from which the blood had issued. All the other parts, both of the pelvis and abdominal cavity, were perfectly sound ; and on opening the vagina and uterus, nothing was observed except what is usual after parturition."

I have added the two preceding abstracts, that the reader may compare them with what I have myself related, and thereby be enabled to form a more correct opinion respecting the symptoms and nature of these important cases.

ON THE CHEMICAL CONSTITUTION

OF

CALCAREOUS

TUMOURS OF THE UTERUS,

AND OTHER PARTS.

BY JOHN BOSTOCK, M.D., F.R.S., ETC.,

TREASURER TO THE MEDICO-CHIRURGICAL SOCIETY.

READ MAY 27TH, 1834.

It is well known that various parts of the body are liable to have deposits formed in them of an earthy or bony matter. These are sometimes found occupying the natural cavities, while, at other times, they are attached to the interstices of membranes, or the coats of vessels: they have been found, in short, in almost all the different structures which compose the animal frame. These bodies have, in a few instances, been made the subject of experiment, and have been found generally to be composed of the phosphate of lime, combined with a small proportion of the carbonate, cemented together by a quantity of animal matter. Fourcroy informs us, that he analyzed a calculus from the duct of the salivary gland, and also some calculi that had been discharged from the lungs, and that he found them to be composed of phosphate of lime and animal matter*.

* System, by Nicholson, Vol. IX. pp. 448 and 467.

Dr. Thomson* obtained the same results from salivary calculi; and M. Breschet states, that both the salivary calculi and those from the uterus are principally composed of phosphate of lime†. It appears also that the small earthy bodies which are occasionally found in the coats of the veins, and which have been termed phlebolites, possess the same chemical constitution‡; and I may add, that my own experience coincides with the above statements. I had an opportunity, many years ago, of examining a salivary calculus, which I found to be composed of phosphate of lime, with a little animal matter§, and more lately I found nearly the same constituents in a pulmonary calculus, and in two concretions from the ovaries. We have indeed an account of a salivary calculus by M. Lassaigne, where the usual order was reversed; 86 per cent. of the substance being carbonate of lime, and 3 per cent. phosphate ||.

I am indebted to the kindness of Dr. Robert Lee

* System of Chemistry, Vol. IV. p. 572.

† Dict. de Méd., Art. "Calcul." Tom. IV. p. 52, 3, and 85, et seq.; see also Bielt, in Dict. Sc. Méd., Tom. III. p. 466-8.

‡ See the analysis of Mr. Kemp, Ed. Med. Journ. Vol. XLIII. p. 23, and of Gmelin, p. 311; also the Article, "Diseases of the Veins", in the Cyclop. of Med., by Dr. Lee, where we are informed that Dr. Prout has obtained the same results.

§ Nicholson's Journ. Vol. XIII. p. 374, 5.

|| Ed. Med. Journ. Vol. XL. pp. 486, 7.

for the opportunity of examining seven of these bodies, and I propose to lay the result of my examination before the Society.

The first of these was described as “calculi discharged from the uterus during life.” They consisted of a number of small bodies, from the bulk of a pin’s head to about three times that size; their form was completely irregular, and in some parts they appeared as if they had been corroded, resembling a decayed tooth. They were of a yellowish white colour, like bone or ivory, and were so hard as not to be cut with a knife. Some of them were single, while others were connected by a membranous substance: the membranous substance had a few dark brown bodies, of the size of a mustard seed, attached to it. The whole, when dried at the temperature of 200° , weighed 6.2 grs.

A portion of the substance was subjected to a red heat; it burned slowly, with a dull flame, and lost about one-fourth of its weight. The residue was treated with dilute muriatic acid, and, with the exception of a few black particles, was quickly dissolved.

Another portion of the substance, weighing two grains, was digested for half an hour in boiling water: no visible effect was produced, except the extrication of a few air-bubbles; it was softened, but its form was not sensibly altered. The fluid was poured off, and examined; the appropriate re-agents did not

indicate the presence of either albumen or gelatine; there was an indication of a very minute quantity of the animal matter, which exists in the serosity of the blood, and a trace of common salt. The substance, being again dried, had not lost any appreciable weight. It was then digested in diluted muriatic acid; a quantity of gas was extricated, and a considerable part of the substance was dissolved; the residue, when dried, weighed $\cdot 45$ gr.; it appeared to consist of a number of thin films, with the dark brown bodies mentioned above. One of each of these was digested in caustic potash; the brown body was slowly dissolved, but the membranous film remained, for a considerable length of time, without being acted on; it was, however, softened, and assumed the appearance of a small bladder or cyst, with a rounded aperture at one of its extremities. I am disposed to think that the brown bodies were clots of blood; with respect to the nature or origin of the cysts, I am unable to form any opinion. The muriatic solution was now examined, and was found to contain a considerable quantity of the phosphate of lime, with a small quantity of the carbonate.

No. 2 was described by Dr. Lee as "a portion of the calculous tumour removed from the body of the female, who had passed portions of the calculi from the uterus during life." It appeared to consist of a number of irregularly formed masses, of a white and somewhat chalky looking substance, connected together by an animal matter, of a brown colour, and

solid consistence, which had the appearance of inspissated mucus. Portions of the substance were subjected to the same processes as in the former case. The water in which it had been digested was found to contain the same ingredients as before, but in greater quantity; the loss of weight being in the proportion of about $\cdot 4$ gr. to five grains: the mass was broken down into a number of fragments, and the animal matter rendered soft and flexible. Diluted muriatic acid acted powerfully on the substance, with the extrication of a large quantity of gas; of two grains that were employed, $\cdot 3$ gr. were left undissolved. The muriatic solution being then examined, was found to contain a large quantity of carbonate of lime, with a small quantity only of the phosphate, the proportion being nearly as ten to one: it also contained the sulphate of lime, in about the same proportion with the phosphate. The animal matter was digested in caustic potash, and what remained undissolved was afterwards subjected to the action of alcohol, spirit of turpentine, ether, and other re-agents, from the result of which it appeared to be identical with the substance which I described in a paper, formerly read to the Society, under the title of albumino-cerous matter *. From the above experiments we may conclude, that the substance in question consisted of an earthy compound, composed principally of carbonate of lime, united to a small quantity of the phosphate and the sulphate of lime; it was imbedded in or connected with an animal

* Vol. XV. p. 154, et seq.

matter, which appeared to be, for the most part, coagulated albumen, with minute quantities of the peculiar substance found in the serosity of the blood, and of what I have termed albumino-cerous matter. From the aspect and general character of the body in question, I should conceive that there is no organic connexion between the earthy and the animal matter of which it consists.

No. 3 was marked "from the uterus." It was an irregular mass, somewhat resembling No. 1, but with less distinct concretions, the earthy and the animal matter being more intimately mixed together; it weighed, when dried, 3·4 grains. By digestion in water it was partially broken down, and the fluid was found to contain the same ingredients as in the two former cases, but in very minute quantity. Diluted muriatic acid acted powerfully on the substance, with the extrication of gas, and dissolved about five-sixths of the whole; the greatest part of what remained was dissolved by caustic potash, but a small quantity was left, which appeared to be of the same nature with the undissolved residue found in Nos. 1 and 2. The muriatic solution was next examined, and was found to contain a considerable quantity of the phosphate of lime, with small quantities of the carbonate and the sulphate. It appeared therefore that the earthy matter of this substance was nearly similar to that of No. 1, and that it was, in like manner, attached to a portion of an animal matter, which resembled coagulated albumen.

No. 4 was described as "from the arch of the aorta." It consisted of a white matter, imbedded in a hard, semi-transparent substance; when torn or divided, the white matter exhibited somewhat of a fibrous texture: the whole weighed $18\frac{1}{2}$ grains. Portions of it were subjected to the same processes as before; the aqueous infusion differed from the former in containing a minute quantity of albumen, and a trace of gelatine, together with the other ingredients. The loss of weight was, however, small, and scarcely to be appreciated, and the substance, although softened and rendered flexible, had its form scarcely changed. By digestion in diluted muriatic acid, it was broken down into fragments, and lost about one-fifth of its weight; the solution contained a considerable quantity of phosphate of lime, with a little of the carbonate and a trace of the sulphate. It may be considered therefore as consisting essentially of the earth of bone imbedded in a membranous body; the earthy matter being in the form of filaments or thin plates, interspersed through the substance of the animal matter.

No. 5 was marked "calculi from the lungs", presented to Dr. Lee by Dr. Bisset Hawkins; it consisted of three small bodies, of which the largest weighed rather more than four grains, and the two smaller about half a grain each. They had all the same appearance, that of a white granular mass, of an irregular form, of considerable hardness, and an earthy fracture. They were readily acted upon by

diluted muriatic acid, with considerable effervescence, the whole being dissolved, except a few minute films, which were suspended in the fluid. The muriatic solution was found to contain a large quantity of the phosphate of lime, with a small quantity of the carbonate, and a trace of the sulphate.

No. 6 was marked "from the lung after death", and No. 7, "coughed up from the lung"; the former weighed about a grain and a half, the latter about half a grain. Their appearance was precisely similar to each other and to that of No. 5, except that a part of the surface of No. 6 exhibited a brown stain, perhaps produced by a particle of blood being attached to it; their chemical composition also appeared to be similar to that of No. 5, except that they contained a still smaller quantity of the carbonate of lime.

The results of the above analyses confirm the opinion that had been previously entertained respecting the chemical composition of these bodies; that they are, for the most part, composed of the phosphate of lime and animal matter, generally united to a small quantity of carbonate. Out of the eleven concretions which I have examined, the only exception is that which was taken from the uterus. This, both in its physical and chemical characters, differed very materially from the others, while it more nearly resembled the salivary concretion that was analyzed by M. Lassaigne.

Since the above paper was read to the Society, I have had an opportunity of examining three other specimens of uterine concretions, of which I shall subjoin a brief account.

The first was put into my hands by Mr. Howship, accompanied by the following history.

“ The patient, a woman, aged 64 years, had for several years been considered by my friend, Mr. Elsegood, to have disease of the uterus, for a tumour, presumably uterine, might be felt within the abdomen, inducing feelings of weight and bearing down, although unattended with pain. Her death was the consequence of an attack of ileus.

“ On examination, we found the uterus the seat of disease; its substance occupied by a number of tumours, beneath the peritoneal covering; several the size of an orange, and one very large one, pendulous, and attached to the back part of the fundus uteri, by a short strong peduncle.

“ The os uteri, and part of the cervix, were healthy. Passing a director into the cervix, and dividing the substance of the uterus, to the extent of an inch, (where the cavity terminated,) exposed a very small polypose tumour, attached by a narrow neck to the lining membrane. The uterine appendages were healthy.

“ The deposit of these bony tumours appeared

to have commenced at various points, within the substance of the uterus. It may be assumed, from the appearance of the parts, that they were formed immediately beneath the peritoneal covering; and this assumption would appear to be borne out by the magnitude of the pendent tumour, which seems to have acquired its neck by becoming gradually separated, and detached, first from the substance, then from the surface of the uterus, by an extension of its nutrient vessels, and peritoneal covering. But on the other hand, there is no doubt that the minute arteries of the uterine parenchyma, have the power of secreting bone as rapidly in one part, as in another. In laying open the cavity of a uterus, apparently healthy, (which is in my collection,) minute nuclei of ossific matter were detected in various parts of its substance. Had this person lived a few years longer, these nuclei, in all probability, would have formed tumours; and as they enlarged, by their pressure exciting absorption of the surrounding substance, and also raising the peritoneal covering, they must eventually have presented an appearance very similar to that seen in the present preparation.

“The large pendulous tumour was composed almost entirely of bone, judging from its weight, and hardness. To determine its structure, more precisely, I applied a saw, and with some trouble detached about one-fourth part of the mass. The section of the piece cut off (which piece weighed 5iv.) demonstrated various cavities, and internal spaces, occupied with membranous and fibrinous matter.”

The portion of the calculus which I received from Mr. Howship was obviously compounded of two substances; a dense and hard body, intermixed with layers, or deposited in the cells of a membranous substance. The exterior surface was irregularly tuberculated, while the interior exhibited a number of cavities of various forms and sizes. The earthy and the animal matter appeared to exist in very different proportions, in different parts of the calculus; I took ten grains of what appeared to consist of an average proportion of the two, and subjected them to the same mode of analysis, as was employed in the former experiments. The result was, that the ten grains were composed of

Animal Matter . . .	3·2 grains
Phosphate of Lime . .	6·45
Carbonate of do. . .	·35
	<hr/>
	10·00
	<hr/>

The next substance which I examined was given me by Dr. Lee; it was a part of the tumour from Dr. Chowne's case, for the description of which, I must refer to Dr. Lee's paper. Of this tumour I subjected a portion, weighing five grains, to the ordinary mode of analysis, when the result was, that 2·1 grains were soluble in water at the boiling temperature; and were found, by the application of the appropriate tests, to consist of jelly, mucus, and extractive matter. Of the 2·9 grains that were left

undissolved, 1·8 grain was soluble in diluted muriatic acid, and was found to contain a considerable quantity of phosphate of lime, with a very minute quantity of carbonate, but with an unusually large proportion of the sulphate. The residue of 1·1 grain consisted of membrane, with a minute quantity of the albumino-cerous matter. The composition of the part which I examined would be as follows; but I may remark, that the proportion of the animal and earthy matter was obviously very different, in different parts of the tumour, and this I suspect to be the case with the calcareous salts.

Jelly, mucus, &c.	. . .	2·1
Membrane, &c.	. . .	1·1
Phosphate of lime	. . .	1·5
Carbonate of do.	. . .	0·2
Sulphate of do.	. . .	0·1
		<hr/>
		5·0
		<hr/>

The third substance which I examined was marked “portion of a calcareous tumour of the uterus, presented to Dr. Lee by Mr. Kiernan.” It consisted of a number of tubercular or vermicular bodies, forming an irregular concretion, and leaving cavities in the interior, of various forms and sizes. The whole weighed fifty-nine grains.

It was subjected to the usual mode of analysis, with the following results. It was not perceptibly

acted upon by boiling water ; it lost no appreciable weight, nor was its form or consistence affected. It was almost completely soluble in diluted muriatic acid, a few fibres or shreds, forming only about one-sixtieth part of its weight, being left undissolved. A large proportion of the substance was found to be phosphate of lime, with a quantity of the carbonate and a trace of the sulphate. The proportion of the calcareous salts was nearly as follows :

Phosphate of lime . . .	8·5
Carbonate of do. . . .	1·45
Sulphate of do. . . .	0·05
	<hr/>
	10·00
	<hr/>

From these three analyses, taken in connexion with those in the body of the paper, we may conclude, that these earthy concretions, in whatever part of the body they may be deposited, are nearly similar in the nature of their constituents, although with some variation in the proportions ; that in almost all instances, the phosphate of lime is the predominating substance, while, in certain cases, the carbonate would appear to be the principal ingredient.

Upper Bedford Place,
Aug. 19, 1834.

OBSERVATIONS
ON
FIBRO-CALCAREOUS TUMOURS
AND
POLYPI OF THE UTERUS.

BY ROBERT LEE, M.D., F.R.S.

PHYSICIAN TO THE BRITISH LYING-IN HOSPITAL, AND SAINT
MARYLEBONE INFIRMARY; LECTURER ON MIDWIFERY AT
ST. GEORGE'S HOSPITAL.

READ MAY 27TH, 1834.

THE most important diseases of the human uterus accompanied with sensible alteration of structure, may be divided into three classes.

I. Those which are produced by inflammation of one or more of the textures which enter into the composition of the uterus.

II. Those which arise from the formation of tumours in the parietes of the organ, or from enlargement of the glands situated in its orifice, which have no tendency to degenerate into a malignant form, and do not contaminate the surrounding structures.

III. Those which result from a specific and malignant action of the uterus, by which its dif-

ferent textures and the adjacent viscera become disorganized.

The phenomena and the treatment of the diseases comprehended in the first of these classes, I have endeavoured to describe in the fifteenth and sixteenth volumes of the Medico-Chirurgical Transactions, and I now propose to make some observations on the pathology of fibro-calcareous tumours and polypi, the most important organic affections included in the second class of diseases of the uterus.

The fibrous tumour, or fleshy tubercle of the uterus, as it was termed by Dr. William Hunter, is sometimes met with not larger than a pea, in other cases it grows as large as a walnut, and occasionally is equal in size to a cricket-ball, or even the gravid uterus in the ninth month. It is generally of a globular form, or kidney-shaped, and when cut into, presents a laminated or radiated semi-cartilaginous structure, the fibres being often disposed in a concentric manner. At other times, this tumour has a granular appearance, or seems to consist of a congeries of smaller tumours, each having a thin capsule of cellular membrane. Most frequently, it has a yellowish white colour, but several specimens of the disease have been of an ash-grey colour, or approaching to a dark slate. When large, the tumour is often unequal on its surface, being lobulated or divided by deep fissures, and arteries and veins of

considerable magnitude can be traced into its substance. Cavities containing a bloody or dark-coloured gelatinous fluid are sometimes formed in the central part of the tumour, probably by a process of softening which its substance undergoes. In a specimen of large fibrous tumour imbedded in the walls of the uterus, which was removed from the body of a woman who died in the Saint Marylebone Infirmary, there is a considerable cavity which contains a coagulum of blood.

In other cases, the tumour does not manifest a disposition to become softer as it enlarges, but its density gradually increases, until the whole or the greater part of the mass has become cartilaginous, or like intervertebral substance, without vessels containing red blood; or calcareous depositions are gradually formed in the substance of the tumour, until it is either partially or completely converted into a concretion composed of carbonate and phosphate of lime. Most frequently the calcareous depositions are first formed in the central and most dense parts of the tumours, but this is not invariably the case, and in a few rare instances the deposit has taken place around the circumference of the tumour, and has enclosed it, as the shell encloses the kernel of a nut. If injection be thrown into the vessels of the uterus, it does not penetrate the substance of the tumour when in this dense state. Fibro-calcareous tumours of the uterus are generally soft and porous, like pumice-stone; but instances have occurred in which they were so hard,

that they admitted of being polished, like ivory or marble. Two specimens of this description are in the museum of St. Thomas's Hospital. Portions of these tumours were analyzed by Dr. Bostock, ten years ago, and were found to consist chiefly of phosphate of lime.

Andral, on the authority of Brugnatelli, states that carbonate and phosphate of lime, with animal matter, enter into the composition of these bodies. Breschet states, that one of the uterine calculi examined by Brugnatelli was a shapeless mass, with a white unequal surface; it emitted a peculiar odour; and was insipid, and insoluble in water. Being broken with a hammer, the surprise was extreme when a portion of the tibia of a chicken was discovered in the centre. The whole white mass forming the calculus was phosphate of lime. The second calculus, when divided into two equal parts, presented on the surface a great number of crystals of ammoniaco-magnesian phosphate; the centre was composed of phosphate of lime. There are several circumstances mentioned in the account of these concretions, which might lead us to suspect that they were urinary and not uterine calculi which Brugnatelli analyzed*.

The body of a woman advanced in years was examined by my colleague Dr. Hope, at the St. Mary-

* Dictionnaire de Medicine, Tom. IV. Art. Calcul.

le-bone Infirmary, on the 17th of August, 1832. The uterus was larger and much heavier than natural, and under the peritoneal coat of its fundus were several small fibrous tumours, with calcareous deposits. On dividing the parietes, a soft yellowish-coloured calcareous tumour, the size of a goose's egg, was found situated under the lining membrane, at the posterior part of the uterus, and distending it like an ovum at the end of the second month of gestation. There are portions of this tumour in which the fibrous structure still remains distinct. The parietes of the fundus and body are thinner than natural; the os and cervix uteri are healthy, but the latter is greatly elongated. The existence of an organic disease of the uterus was not ascertained before death*.

Mr. Henry Johnson shewed me a large fibro-calcareous tumour imbedded in the walls of the fundus uteri, which he had removed from the body of an aged woman who died in St. George's Hospital, in whom, during life, the existence of an organic affection of the uterus had not been suspected. Towards the circumference of the tumour, the fibrous structure was distinct, but the central part consisted of a hard, yellow-coloured concretion of carbonate and phosphate of lime. The parietes of the uterus surrounding the tumour were hypertrophied.

* Cases of elongated cervix uteri have been recorded by Morgagni, Levret, Lallemand, Desormeaux, Cruveilhier, Boivin, and others.

In Mr. Howship's collection, there is a uterus which weighs several pounds, from the presence of a number of dense fibro-calcareous tumours in its parietes. One of these, which hangs by a slender peduncle from the fundus uteri, is only partially converted into calcareous matter, the remaining portion exhibits the usual compact structure of the fibrous tumour of the uterus. Mr. Howship presented a portion of one of these concretions to Dr. Bostock for analysis. When sawn across, the tumour appeared harder than bone, and might have been polished like ivory.

On the 21st of January, 1834, a woman, æt. 64, died of apoplexy in the St. Mary-le-bone Infirmary. Mr. Blenkins examined the body. The fundus, body, and cervix uteri were all reduced to a very small size. Adhering to the fundus, and covered only by peritoneum, were two large fibrous tumours. In the most dense portions of one of these were several yellow-coloured calcareous deposits. Arteries and veins of considerable magnitude were seen ramifying under the peritoneum of the larger tumour, but there was no appearance of a blood-vessel in the central part*.

* Atrophy of the uterus is a rare disease. Mr. Griffiths, of Pimlico, has a remarkable specimen of it in his collection. The muscular coat of the uterus has been entirely removed. There is a fibrous tumour under the peritoneum of the fundus. When the cavity is distended with air, the uterus is diaphanous, like a urinary bladder. The os uteri is healthy. Walter described this disease in 1786, and termed it a membranous uterus.

In the cases which I have now related of calcareous tumours of the uterus, they were accompanied with little or no pain, and the existence of disease was not ascertained before death. In the following example of calcareous concretion, malignant ulceration of the body of the uterus was also present, and the patient sunk after long protracted suffering.

CASE.

In the month of September, 1832, I was requested by Sir Gilbert Blane to see Mrs. B., aged sixty-two, who for many years had suffered from constant sense of weight and uneasiness in the back, loins, and hypogastrium, with almost constant purulent and sanguineous discharge from the vagina. She had been married for many years, but had never become pregnant, and from the age of forty-five, when she ceased to menstruate, she had suffered several severe attacks of uterine hemorrhage. On examination, the hollow of the sacrum was found occupied by a large and hard tumour connected with the posterior part of the uterus. The os uteri had undergone little change, but the peculiar foetor of the discharge, and the constitutional symptoms, led me to suspect the existence of a malignant disease of the body of the uterus. In the course of a few months, after suffering excruciating pain in the region of the uterus, difficulty in passing the urine, with a profuse discharge of thin, offensive fluid from the vagina, several portions of small irregular-shaped concretions escaped from the vagina,

with a temporary relief of the most distressing symptoms.

During the remainder of 1832, Mrs. B. continued to suffer severely from the same symptoms, and she uniformly experienced relief after a calcareous concretion had passed from the vagina, which happened four or five times during that period. In the month of November, 1833, a few days after travelling a distance of eighty miles from the country, she was attacked with rigor, vomiting, exquisite tenderness over the lower part of the abdomen, and other symptoms of peritonitis, and died in forty-eight hours.

I inspected the body the following day with Dr. Webster.

The usual effects of severe peritonitis were seen on laying open the abdomen. The fundus and body of the uterus were extensively disorganized by malignant ulceration; to the posterior part of the body of the uterus was adherent a large fibro-calcareous tumour, which filled up the hollow of the sacrum, and displaced the rectum. The ulceration had extended through the parietes of the uterus to the tumour.

One of the concretions which had been passed during life was analyzed by Dr. Turner, and found to consist entirely of carbonate of lime and animal matter. Dr. Bostock analyzed another concretion passed

by the same patient at a later period, and a portion of the tumour removed with the uterus after death. An interesting account of these and other specimens of uterine calculi, has been laid before the Society by this distinguished chemist.

A case of malignant ulceration of the uterus with a calcareous tumour, in some respects analogous to the preceding case, has been recorded by M. Louis in the second volume of the *Memoirs of the Royal Academy of Surgery*. With the symptoms and consequences produced by these concretions of the uterus, M. Louis was well acquainted, but it does not appear from any observation contained in his memoir, that he possessed a knowledge of the manner in which these bodies are formed, and the state of chemical science at the time did not enable him to know their composition. The term calculous concretion of the uterus, employed by M. Louis, proves that he knew them to be different from bone.

Schenkius has collected together, from the works of Hippocrates, Vallesius, Salius, Marcellus Donatus, &c., the histories of many wonderful cases of stones discharged from the uterus during life, or found after death.

Michel Morus gives the history of a woman, upwards of forty years of age, who died of a pleurisy, and had suffered for a long time severe pains of the

hypogastrium, for which all remedies had failed to procure relief. On examination, a hardness was felt in the uterus. There escaped from the vagina an acrid discharge, like the washings of putrid flesh. Thirty-two stones were found in the uterus, the smallest of which was the size of an almond. Different folds of the uterus retained them, and some of them were in the Fallopian tubes. He believed these concretions to be of the same nature as bezoards, and he affirms that he saved the lives of several persons by their use. The stones found by Michel Morus in the Fallopian tubes and folds of the uterus, were probably phlebolites or vein-stones, and not fibro-calcareous concretions of the uterus.

With the origin of calcareous concretions of the uterus, pathologists do not appear to have become acquainted till a comparatively recent period. Walter has given representations of these bodies in his *Annotiones Academicæ*, published in 1786, and he states that calculi and polypi are sometimes simultaneously present in the uterus and vagina. It does not appear, however, from this observation, that he was aware of the intimate relation which exists between them, and from an examination of some of the preparations in the Hunterian Museum at Glasgow, I am disposed to believe that Dr. William Hunter was acquainted with the different situations which fibrous tumours occupy in the uterus, and with the various changes which they undergo in the progress of their development.

From an examination of a single specimen of the disease, Dr. Baillie was led to suspect, in 1787, that calcareous concretions of the uterus commence as fibrous tumours. "In the cavity of the uterus", he observes, "a bony mass is sometimes found. When this is the case, I suspect that the hard fleshy tubercle within the cavity of the uterus, such as I have already described, has been converted into bone. This at least had taken place in the only instance which I have known of this disease, for a great part of the tubercle still remained unchanged, and I think it very probable that such a change most frequently happens where the bony tumours are found."

Dr. Baillie refers to Lieutaud for proof of the fact that stones have been found in the cavity of the uterus. "These are described by authors", he adds, "as varying in their appearance, some being of a dark, others of a light colour. They are silent about their nature, and I can say nothing of it from my own knowledge, as it has never occurred to me to see an instance of this disease. Such concretions are probably formed from matter thrown out by the small arteries which open on the internal surface of the uterus, and are in some degree analogous to the concretions formed in some glands of the body."*

Bayle, Bichat, Roux, Breschet, Andral, and other

* The Works of M. Baillie, M.D., by James Wardrop. 1825. Vol. II. p. 331.

writers on the pathology of the uterus, have been fully aware of the fact that fibrous tumours occasionally become calcareous, or as they have inaccurately been termed, bony. Whether all the concretions reported to have been found in the cavity of the uterus, and imbedded in its walls, are formed by deposits in the substance of fibrous tumours, and whether the substance of the uterus itself is ever converted into bone, as several authors affirm to have been the case, it is impossible, in the present imperfect state of our knowledge, satisfactorily to determine. One of the most recent systematic writers on pathology, observes, "that the history of the mode of development of this deposition is not exactly known, and that it is not quite certain whether the ossification originates invariably in the mucous chorion. This, indeed, appears to have taken place in the instance mentioned by Walter, and in such cases of uterine ossification as that recorded by Dr. Caldwell."*

Breschet believes that calculous concretions of the uterus may come from the Fallopian tubes, and that these canals are sometimes obstructed by calculi.

Bayle has described the fibrous tumour of the uterus as fleshy at its commencement, and of a red colour, like muscular fibre, then as becoming carti-

* Craigie's *Elements of General and Pathological Anatomy*. Edin. 1828, 8vo. p. 732.

luginous, and in the last stage osseous. This may be the case with a few examples of the disease, but I am disposed to think that it is not generally so, and that the greater number of these tumours never exhibit a muscular or fleshy appearance at any period of their existence, but have a fibrous structure equally distinct, when not larger than a pea, and when exceeding in magnitude the head of the human adult.

Sometimes we find only one tumour present in the walls of the uterus, at other times several are met with of different sizes, and not unfrequently they are combined with cysts and tumours of the ovaria. They have no disposition to ulcerate, nor to assume a malignant character, though they are not unfrequently observed in individuals who have cancerous affections of the uterus, bladder, mammæ, liver, and other organs. They have never been observed before the age of puberty, and M. Bayle affirms, that they are most frequently met with in the bodies of those women in whom the physical signs of virginity are present, and that in twenty out of 100 women, taken indiscriminately, after the middle period of life, the fibrous tumour is found imbedded in the walls of the uterus. Of twenty uteri examined by Portal, thirteen contained fibrous tumours, and Dupuytren affirms, that there are few women of a certain age who are without tumours of this description about the uterus. From the observations I have made, I am persuaded that M. Bayle's estimate is correct.

Fibrous tumours are developed either in the cellular membrane under the peritoneal coat of the uterus, or between the layers of its muscular or middle coat, or immediately between its middle and mucous coats. When situated between the peritoneum and muscular coat, they give rise to no irritation, hemorrhage, or derangement, either in the uterine functions, or general health, and their existence even can only be guessed at during life. But when they attain a large size, and occupy a great part of the abdominal cavity, they produce all the injurious consequences of enlarged ovaria, from which, indeed, during life, they are distinguished with difficulty, and death takes place usually from interrupted circulation and long continued pressure on the bladder and other contiguous viscera. Retroversion of the uterus and retention of urine have taken place in the latter stages of the disease.

When situated under the peritoneum of the uterus, fibrous tumours do not prevent impregnation, because they do not interrupt the communication between the vagina and ovaria, but when adherent to the posterior part of the body or neck of the uterus, they sometimes produce fatal consequences both to the mother and child, by impeding its progress through the pelvis. M. Chaussier presented to the School of Medicine, the uterus of a woman who died in labour at the Maternité, in which there was a fibro-cartilaginous tumour as large as the fist, imbedded in the walls of the neck of the uterus. This tumour had formed such an obstacle to labour, that

the head of the child was crushed to pieces in its passage through the pelvis.

In the museum of the London University there is a fibrous tumour as large and nearly as hard as a cricket-ball, which was removed from the body of a woman who had died undelivered. The tumour was situated under the peritoneum, at the posterior and inferior part of the uterus.

Dr. Merriman has cited a case from Van Doeveren, where the expulsion of the child was prevented by the presence of a large polypus of the vagina. He twisted its pedicle and tore away the tumour with his hands, after which a dead child was expelled. Dr. Merriman has also related the history of another case, in which a fibrous tumour of considerable size was connected with the os uteri of a pregnant woman. A ligature was applied around the peduncle, and in a few days the tumour fell off. The general health of the patient improved after the operation, she went to the full time, but the child was still-born.

Dr. Gooch relates a case which occurred in the practice of Mr. Borrett, of Yarmouth, in 1799, and terminated fatally soon after delivery. At the commencement of labour a tumour was discovered in the vagina. After the rupture of the membranes, as the child did not advance, it was delivered by turning, and was born alive. The placenta was expelled spontaneously, but some hours after, a soft round

tumour was found pressing on the os externum. Violent expulsive pain continued for many hours, and twenty-four hours after delivery, a large fleshy tumour, like an inverted uterus, had been forced out of the vagina. She continued to suffer during the whole of this day, and died in the evening. The body was examined the following day. The uterus was contracted, but its mouth was dragged down as low as the external orifice by a tumour, which grew from it by a broad base. It was attached to the posterior part of the mouth of the womb, and some way up the neck was of a livid colour, and weighed three pounds fifteen ounces. The patient had borne her last child before easily and naturally, but some time before her present pregnancy, she looked as large as if seven months with child.

M. Deneux relates the history of a case of fibrous tumour of the uterus expelled into the vagina after an abortion at the fourth month. "The lady, *æt.* 30, after her second child, observed the abdomen larger than natural, menstruation became irregular, and she had occasional attacks of menorrhagia. She again became pregnant, and miscarried at the fourth month. The after-birth was expelled with difficulty, and the uterus remained larger than usual. Fever followed, with pain of abdomen. After some days a soft fleshy body was perceived at the vulva, which was supposed to be the placenta. The febrile symptoms continued; and this body, which was discovered to be a fibro-cartilaginous tumour, was re-

moved by a ligature applied around its neck, but the patient died. On examining the tumour, which was the size of the fist, its form was found to be irregular, and it was composed of two distinct parts: 1st. An exterior portion in a putrid gangrenous state: 2dly. A central portion, white, fibrous, lamellar, presenting an appearance of little cells, and hard and resisting when cut with the knife. Uterine and abdominal inflammation followed. The tumour had sprung from the inner part of the anterior wall of the uterus. The ligature had been applied to the proper tissue of the uterus. A smooth cavity was found in the anterior wall of the uterus, which was lined with a fine membrane, a portion of which was enclosed in the ligature. Uterus healthy in other respects." *

One of the most remarkable cases of expulsion of a fibrous tumour from the uterus, observed by M. Cruveilhier, occurred in a young woman who was attacked, nineteen days after a difficult labour, with pains exactly like those of labour, and which led him to believe that superfœtation had happened. After suffering so severely for three days that her life was despaired of, the patient passed three flattened bodies of considerable consistence, which were readily recognized to be altered fibrous bodies of the uterus.

When fibrous tumours are formed between the

* *Repert. General d'Anatomie, &c. Tom. VII., 1829.*

† *Anatomie Pathologique, Livraison XIII.*

muscular strata of the uterus, and they attain a large size, its fundus, body, and orifice usually become hypertrophied as during pregnancy, and greatly altered in shape. If situated mid-way between the peritoneal and mucous membranes, they press equally in all directions, as they slowly enlarge, and cause the uterus to project both on the external and internal surfaces. When a thin layer of muscular fibres is interposed between the tumour and peritoneum, the projection is observed only on the corresponding peritoneal surface of the uterus, and the cavity of the organ remains unchanged.

When fibrous tumours are imbedded in the proper tissue of the uterus, women are frequently barren, or if they become pregnant, abortion takes place in consequence of the uterus being incapable of undergoing the necessary development in the latter months of gestation. When the ovum is not prematurely expelled, death may take place in such cases from uterine hemorrhage, soon after delivery. M. Chaussier saw a woman die from flooding, soon after giving birth to a full grown child, and there was a large fibrous tumour in the posterior walls of the uterus. This tumour was not situated so as to present an obstacle to the passage of the child through the pelvis, but soon after delivery it was perceived that the uterus had not the power of contraction. Profuse hemorrhage took place from that part of the uterus in which the tumour was lodged, the flow of blood could not be arrested, and the patient died.

A woman, æt. 42, was delivered by embryotomy of a still-born hydrocephalic child. The liquor amnii amounted to sixteen pints. Profuse uterine hemorrhage followed the extraction of the placenta, and on the third day after delivery, death took place from inflammation of the peritoneal and muscular coats of the uterus. I examined the body, and found a hard fibrous tumour, the size of a hen's egg, imbedded in the muscular coat, where the placenta had adhered to the uterus.

Dr. Outrepoint delivered a woman, who died soon after from uterine hemorrhage. Three fibro-cartilaginous tumours were found on dissection in the body of the uterus, the largest of which measured ten inches in the long diameter, and five in the other. They had prevented the development of the fundus uteri in the last months of pregnancy, and the child had only room in the uterus by the excessive dilatation and extreme thinning of the cervix uteri*.

A woman, 40 years of age, was delivered of twins, and died in three days of uterine inflammation. The body was examined by Dr. Chowne, and a large fibrous tumour enclosed in a shell of calcareous matter was found imbedded in the posterior walls of the uterus.

There are no symptoms by which we can positively

* Archives de Medicine, 1830.

determine, during life, the presence of fibrous tumours situated between the muscular strata of the uterus: they may, however, be suspected to exist in those individuals who, being advanced beyond the middle period of life, suffer habitually from leucorrhæal discharge, who menstruate profusely, and have frequent attacks of menorrhagia, with sense of weight and irritation in the region of the uterus and adjacent organs. No alteration of structure can be discovered in the cervical portion of the uterus; but when an examination is made, the uterus is felt larger and heavier than natural. The os uteri is neither irregular, indurated, nor painful on pressure, as it is found to be when affected with malignant disease.

But the fibrous tumour is sometimes developed between the mucous or lining membrane of the uterus and the muscular coat; and as it enlarges, it gradually distends the cavity like an ovum, and pushes before it, through the orifice, that portion of the lining membrane by which it is covered, in a manner somewhat analogous to what takes place in hernia, when the peritoneum is pressed forward by the intestine through the inguinal and crural canals. By the constant and powerful action of the uterus, the tumour is gradually forced into the vagina, where, after the lapse of a longer or shorter period, it undergoes various changes of structure in its covering membrane, peduncle, and central portion. The mucous covering of the tumour sometimes presents no sensible alteration; but more frequently it

becomes highly vascular, thickened and inflamed, or it ulcerates and sloughs, and thus gives rise to a fetid, sanious discharge from the vagina, and to all the other symptoms of malignant disease. In a few rare instances, the tumour has formed adhesions with the vagina.

M. Dupuytren was of opinion that uterine polypi, if abandoned to themselves, ultimately become disorganized by cancer. So long, he observes, as they have a red or white discharge, there is no feter, and they are throughout of equal density. If the speculum be introduced, a smooth rose-coloured body is observed; but if there be a sanious discharge, there is then great feter, and when examined we find a soft fungous tumour extending over a surface which bears a relation to the period which has elapsed since the supervention of the symptoms in question. It is also at this time that the constitution begins to suffer in a severe degree, that the skin becomes of a pale yellow, that fever sets in, that emaciation advances, and that the appetite and sleep are lost. There appears to be a decided coincidence, continues M. Dupuytren, between the appearance of gangrene as marked by the fetid, sanious discharge, and the commencement of the cancerous degeneration. This change takes place first in the inferior part of the tumour, which is exposed to the contact of the air; the pedicle is the part last affected. The accuracy of these statements respecting the cancerous degeneration of uterine polypi, has not been confirmed

by the following or any of the other examples of the disease which have come under my observation.

C A S E.

A woman, forty-four years of age, died in the Saint Marylebone Infirmary, with the usual symptoms of malignant disease of the os uteri. She suffered much for many months before death, from pain in the hypogastrium, and had a profuse sanguineous and purulent discharge from the vagina. She had a sallow complexion, and was much emaciated. I am indebted to my friend and colleague Dr. Sims for the history of the case and the preparation of the parts.

Under the peritoneum of the fundus uteri was a fibrous tumour with a narrow neck, the size of a large walnut. From the inner surface of the fundus uteri there hung by a soft slender root a tumour of a pyriform shape, the greater part of which had passed through the os uteri and filled the upper part of the vagina. The tumour was covered by a thick membrane continued from the lining membrane of the uterus. The membrane covering the stalk was perfectly smooth, but that portion which covered the most depending part of the tumour was soft and partially destroyed by ulceration and sloughing. The central part of the tumour had a dense fibro-cartilaginous structure. Another fibrous tumour, an inch in diameter, was imbedded in the muscular tis-

sue of the uterus near the root of the tumour, filling the vagina, which it strongly compressed. When the uterus was laid open, its cavity contained coagulated blood.

In the following interesting case, for the details of which I am indebted to my colleague Mr. Perry, the fibrous tumour was covered by a capsule, which consisted, not only of the lining membrane of the uterus, but of a layer of muscular tissue. The body was examined after death by Dr. Sims and Mr. Hutchinson, and when they laid open the tumour from the root to the apex, they were both convinced that the substance of the uterus was continued into the tumour and formed its peduncle. The preparation of the uterus with the tumour attached to its cervix, was presented to me by Mr. Perry, the day after the examination of the body took place.

CASE.

A woman, forty-seven years of age, supposed to be labouring under ascites, and much exhausted by hemorrhage from the uterus, was brought into the Saint Marylebone Infirmary on the 26th November, 1833. A few days after her admission it was ascertained by Dr. Sims and Mr. Perry, under whose care she was placed, that there was a globular-shaped tumour, larger than the foetal head at the end of the ninth month, hanging out of the vagina. The tumour

resembled at first a prolapsed uterus, but when the finger was passed into the vagina, it was found to be connected with the anterior lip of the os uteri by a short root of considerable thickness. The surface of the tumour was of a dark livid colour, and had a sloughing gangrenous appearance in different parts. The woman was so enfeebled in body and mind that she could not communicate a distinct account of her complaints, and the precise period when the tumour appeared externally could not be ascertained.

She stated that she had suffered for several years from profuse discharges of blood from the vagina, and that at different periods a tumour had protruded, which she had always succeeded in returning within the parts by pressure. Dr. Sims and Mr. Perry being of opinion that the removal of the tumour by the ligature afforded her the only chance of relief, Mr. Perry immediately performed the operation with the double canula. She suffered little pain after the ligature was tightened. Twenty-five minims of laudanum were given, and she appeared to be going on well till the evening, when she began to sink, and died in less than twenty-four hours from the time when the ligature was applied.

Dissection. A large cyst, containing several pints of fluid, was found adhering to the left ovarium. There were several small cysts in the right ovarium. The uterus and vagina were healthy. To the anterior part of the cervix a large hard tumour, flattened

on the anterior and posterior surface, was found attached by a thick short peduncle, in which was a slight depression from the ligature. The tumour was invested by a membrane, which was continued from the lining membrane of the uterus. A yellowish-coloured exudation of lymph, which readily peeled off in flakes, partially coated the surface of the tumour, and when pressure was made, blood oozed out from numerous small openings. The root of the tumour was half an inch in length and one inch in diameter, extremely dense, and of a red fleshy appearance, like the muscular coat of the gravid uterus. Numerous large blood-vessels, resembling the sinuses of the gravid uterus, filled with coagula, were seen in the peduncle and in a considerable part of the substance of the tumour. The tumour when first laid open had a dark livid colour like venous blood. Its structure was not uniform. In the most depending part of the tumour was a mass which had the appearance of a common fibrous tumour of the uterus. The root and a great portion of the tumour surrounding this firm nodule had a different structure; they resembled the muscular coat of the uterus, and to all appearance were formed by a continuation of this tissue. Numerous large vessels, resembling the sinuses of the gravid uterus, also traversed this portion of the tumour as well as its root*.

* At a meeting of this Society, held soon after the occurrence of the preceding case, I gave an account of the symptoms before death and the appearances on dissection. Dr. Sims then stated that the neck of the tumour was formed of a portion of

In the 13th Fasciculus of M. Cruveilhier's *Pathological Anatomy*, there is a representation of a uterus, in the anterior wall of which has been developed a fibrous tumour whose capsule is formed of the lining membrane and a layer of muscular tissue. The cavity of the organ was completely distended by the tumour, which was traversed by large veins, some of which were filled with coagulated blood. In different parts of the tumour there were also small cavities filled with serum, and several great uterine sinuses

the proper or muscular tissue of the uterus, and that the death of the patient was occasioned by the ligature or operation involving a portion of the sensitive tissue of the uterus, which, from its known impatience of injury, occasioned the speedy death of the patient. Dr. Sims also stated that this case, and two or three others which he had seen, explained the original seat of these tumours, which have fleshy necks, and their progressive development. That they were first formed in the muscular tissue of the uterus in the following manner:—1st. If in the centre of the wall of the uterus, they would grow there, and sometimes attain the size of an orange, completely embedded in the muscular tissue. 2dly. If nearer the abdominal surface of the uterus, they would expand into the cavity of the abdomen, and form large tumours, covered by the peritoneum. 3dly. If formed near the cavity of the uterus, they would project into the cavity and protrude before them the muscular tissue, and that the neck of the tumour would be formed by a portion of the substance of the uterus, as before stated. Dr. Sims further observed, that the part of the polypus remote from the wall of the uterus would press upon its covering in the greatest degree, and would occasion its thinning and absorption, and thus account for its not being detected in this part. This view of the formation of these tumours he thought would also explain the cause of the want of success in this operation.

opened upon its surface at the apex, from which the blood had flowed which destroyed the patient. " Cette tumeur", observes M. Cruveilhier, " était ramollie ; les petites masses dont l'agglomération constitue les tumeurs fibreuses, étaient disjointes, et la sérosité remplissait leurs intervalles. La mollesse de la tumeur rendait son enucleation difficile : cependant on saisisait aisément la ligne de démarcation qui séparait le tissu utérin du tissu de la tumeur." " On conçoit," he further remarks, " que la distension de l'espèce de coque qui recouvre le corps fibreux proéminent dans la cavité utérine doive amener quelquefois l'inflammation, l'usure de cette coque, et l'expulsion définitive de la tumeur. Il existe un assez grand nombre d'exemples des ces expulsions spontanées, qui sont toujours accompagnées d'accidents très graves." " Les efforts d'expulsion peuvent avoir pour résultat le déchirement de la couche qui recouvre les tumeurs : et si de gros vaisseaux se trouvent compris dans l'épaisseur de cette couche, une hémorrhagie mortelle peut en être la suite. Ces hémorrhagies peuvent se renouveler aussi souvent qu'il se font les efforts d'expulsion, efforts qui, comme toutes les fonctions utérines, sont soumises à la loi de périodicité." P. 18.

Boivin and Duges also entertain the opinion that uterine polypi are sometimes covered with fleshy fibres, which are continuous with the muscular coat of the uterus. " Le Docteur Breschet assure qu'il a toujours vu les polypes revêtus d'une membrane mince unie, luisante ; dans d'autres cas bien distincte, charnu et d'autant plus mince qu'on se rapprochait davantage

du pedicule si la tumeur était volumineuse, d'autant plus epaisse si la grosseur était mediocre, mais toujours evidemment continue avec les fibres charnus de l'organe même dans lequel le polype a pris naissance, elle était bien manifestement due à la couche interieure de ces fibres respoussée en dedans et entraînée à la surface d'un corps fibreux, dont le siège primitif avait été l'epaisseur même des parois du viscere."*

In the following remarkable case, for the history of which I am indebted to Dr. Merriman and Mr. Cocke of Cleveland Street, the capsule, formed of the lining membrane and a layer of muscular tissue of the uterus which covered the fibrous tumour, had entirely disappeared, not only at the apex, but in the middle of the tumour on one side.

C A S E.

On the 18th November, 1833, Mr. Cocke was called to a patient about the middle period of life, who was in labour with her fifth child. There was considerable flooding, and he could feel a spongy mass adhering to the posterior part of the cervix of the uterus, which he suspected to be the placenta. No part of the child could be felt. After waiting for some time, as the discharge of blood continued, and the uterine contractions, though powerful, had little effect in advancing the child, Mr. Cocke passed his hand into the uterus, and immediately coming in

* *Traité Pratique des Maladies de l'Uterus*, Tom. I., p. 338.

contact with the arm of the infant, he brought down the lower extremities into the vagina and delivered the child. Considerable difficulty was experienced in extracting the head. The placenta was soon expelled, and the quantity of blood subsequently discharged was moderate. The pains continued severe throughout the night, and the following morning a tumour, as large as a child's head, was felt within the uterus, adhering to the posterior and inferior part. Dr. Merriman, on being consulted, was satisfied that the pains were produced by the presence of a large tumour within the substance of the uterus. She died three days after delivery, and the body was inspected by Mr. Cocke.

Seven months after, I had an opportunity of examining the tumour, which I found embedded in the walls of the uterus at the posterior and inferior part, projecting into the cavity, and almost completely filling it up. The root and body of the tumour were covered by the lining membrane and a stratum of muscular fibres of the uterus, At the most depending part there was a circular opening in the capsule, about an inch and a half in diameter, with thin smooth edges, through which aperture a portion of the fibrous tumour projected. On the right side two considerable openings had likewise been formed in the capsule of the tumour. The peduncle of the tumour consisted of the natural muscular tissue of the uterus. Large veins were visible not only in the root, but in the expansion of the mus-

cular fibres over the body of the tumour. The appearances are seen in the preparation of the parts and in the accompanying drawing *.

When a fibrous tumour is formed between the muscular strata, and consequently is covered both by the lining membrane of the uterus and a layer of muscular fibres, the peduncle is proportionably thick and short. A longer continuance of uterine action is also required to force a tumour formed in this situation into the vagina, and the patient not unfrequently dies from irritation and loss of blood before it has been expelled from the cavity of the uterus. The dissections which I have made induce me to believe that it is not on the situation or primitive state of the polypus, as Herbiniaux and Dupuytren have supposed, that the consistence and form of the peduncle depend, but on the quantity of muscular fibres carried before the tumour; and that in those cases where the root of a uterine polypus is thick and short, it will be found to be composed not only of mucous membrane but of muscular coat of the uterus. This account of the formation of uterine polypi will satisfactorily explain why it is unnecessary, as many have supposed, to pass the ligature for the removal of polypi close to the uterus, and it also explains a circumstance pointed out by Clement and Puzos, that the root of the polypus which remains never grows again after the general mass of the tumour has been removed.

* See Plate II.

Fibrous tumours are found attached either to the fundus, body, cervix, or os uteri. Inversion of the unimpregnated uterus is sometimes produced when a large fibrous tumour is developed in the walls of the fundus, and passes through the orifice into the vagina. A case occurred to Dr. William Hunter, in which the patient died by including a portion of the inverted uterus in the ligature.

Dr. Denman saw a young lady who had suffered long from frequent uterine hemorrhages, together with most violent pains recurring in the manner of those of labour. High up in the vagina he discovered a polypus, round which a ligature was with difficulty passed. When he began to tighten the ligature she complained of very severe pain and presently vomited. It was immediately slackened, but on every future attempt to draw it tighter the same symptoms were instantly produced. After many trials he was obliged to desist, leaving the ligature loose round the polypus, *merely to keep up in the mind of the patient some hope of benefit.* The health of this patient was very bad when Dr. Denman first saw her, and in about six weeks from the time of the operation she died. Leave being given to open the body, the uterus was found inverted and the ligature to have passed over the inverted part, which occasioned all the symptoms before mentioned. This polypus, Dr. Denman observes, could not have weighed more than an ounce, and had a very short, if it could be said to have any stem; so that the

uterus could not in this case have been inverted mechanically, but by its own vehement action excited to expel the polypus, which, like any other extraneous and offending body, was a perpetual cause of irritation.

In the Museum of the London University there is a specimen of inverted unimpregnated uterus. A large fibrous tumour, with a thick neck, is seen hanging from its fundus. Mr. Alexander Shaw has informed me, that this was removed from the body of a woman who lay a long time in the cancer-ward of the Middlesex Hospital. She was a woman who had borne several children, and the opinion of those who saw her was, that her uterus had been inverted after delivery.

It occasionally happens, when a fibrous tumour is large and formed under the lining membrane of the cervix of the uterus, that it is suddenly expelled from the vagina by vomiting, or any violent effort, and produces appearances externally which strikingly resemble those observed in cases of chronic inversion of the uterus. The membrane which covers the inverted uterus and the fibrous tumour being the same, and liable to similar changes of structure, without an acquaintance with the previous history of the patient, and a close examination of the symptoms, the diseases might readily be confounded.

Though the facts which have now been stated

clearly demonstrate that the greater number of uterine polypi are fibrous tumours which have been formed under the lining membrane and a stratum of muscular tissue, we are not entitled to conclude, as some have done, that these are the only tumours which make their way from the cavity of the uterus into the vagina, and which are not of a malignant nature. There is a tumour of the fundus or body of the uterus, which grows occasionally from its mucous membrane, or is formed by a morbid change of the mucous membrane itself, which does not acquire a large size, but which seems to be analogous to the common polypus tumour which is formed in the cavities of the nose. It has a broad base and flattened form, and in some cases is largely supplied with blood-vessels. Only two specimens of this disease have been observed by me, and they are now placed on the table of the Society.

There is still another tumour formed under the lining membrane of the uterus, whose structure is peculiar, and differs from any of the preceding. It consists of a congeries of small vesicles or cysts, filled with a clear or yellowish coloured ropy fluid, which cysts are embedded in a soft fibrous substance formed under the lining membrane of the uterus. Five examples of this disease have come under my observation, and in all the tumour was situated under the lining membrane of the fundus, which was very thin and highly vascular. Two of these tumours were adherent to the uterus by a

broad base. One resembled a dried fig, the other was larger than a hen's egg, and distended the cavity of the uterus, the parietes of which were healthy. The appearances presented by these tumours immediately after their removal, have been faithfully represented in the accompanying drawings.

Boivin and Duges have probably described the same disease under the term cellular excrescence of the uterus. "In a considerable number of cases," they observe, "this variety of polypus sprung from the os tinæ, and one whose presence had not been indicated during life had the shape and size of the kernel of a plum-stone; it was soft, of a red-brown colour, streaked with small vessels, and readily separated from the surface, to which it adhered by a slender peduncle. In the same body were observed three similar tumours, one of which was attached to the fundus, the other to the cervix. The exterior of these tumours was continuous with the tissue of the uterus, which tissue formed their covering membrane. Internally, this polypus was also continuous with the substance of the uterus, and was only an extension of this substance in a more cellular and filamentous form." P. 269.

A fourth variety of tumour of the uterus to which the term polypus has also been applied by writers, is produced by a morbid enlargement of the glandulæ or ovula Nabothi. One of these bodies is sometimes

converted into a cyst, as large as a walnut or even a hen's egg, and hangs by a slender peduncle from the cervix or lips of the os uteri. It is smooth and vascular, and contains in some instances a curdly matter, or yellow-coloured viscid fluid. The tumour produces great irritation, and gives rise to copious sanguineous and mucous discharges from the vagina. In a uterus presented to me by the late Mr. John Wood, there are several enlarged glands hanging from the cervix, by long, slender, and flattened stems. One of these glands, the size of a walnut, was tense and smooth, and when cut open was found to contain a yellow curdly matter. I have since met with several other examples of this affection. The appearances in these cases are represented in the accompanying drawings*. Though unacquainted with the nature of the glandular tumour of the os uteri, Herbiniaux has given a description of the appearances it most frequently presents. "There is another species of polypus," he observes, "extremely soft, of which M. Levret has not made mention : it is a little excrescence of the same form as the preceding, but which is always very small ; it arises from a segment of the orifice of the uterus, and either remains within the orifice or hangs a few lines out of it. Often it is not larger than a pea,—sometimes it is the size of the finger, but its stem is usually very large, considering the small size of the tumour."†

* Plate III. Fig. 1, 2, 3.

† *Traité sur divers Accouchemens Laborieux, &c.* Bruxelles, 1782.

Portal states that excrescences analogous to those in the nose and in the mammæ sometimes arise from great congestions of the follicles and lacunæ of the cervix uteri *.

Dr. Gooch has also described polypous tumours of the os and cervix uteri, originating in an enlargement of the mucous glands and follicles of the cervix uteri; but he appears to have been unacquainted with the differences which exist between the structure of the glandular and fibrous polypus of the uterus. "A polypus is sometimes so small," he remarks at p. 287, "that it seems incredible it should occasion the frequent hemorrhagies which attend it. Yet the hemorrhage ceases on the removal of the polypus. I have felt them, as small as a filbert without its shell, growing to the neck or lip of the uterus. They were so small, that on being touched they slipped into the orifice of the uterus, and there remained concealed till the finger was withdrawn and the patient stood up, when they dropped again into the vagina. I saw an elderly woman with a polypus of this size: the day was fixed for its removal, but before it arrived she was using a lotion with a long pewter syringe; it fell away."

Andral and Boivin have described the same disease in the following passages, though the latter appears to have confounded it with the fibrous tumour of the

* Cours d'Anatomie Medicale, Tom. V. p. 523.

uterus. "Au lieu de ces corps fibreux on rencontre quelquefois dans l'épaisseur des parois de la matrice des kystes sereux, de grandeur variable, dont il serait fort difficile d'assigner l'origine. Ces kystes s'observent surtout vers le col de l'organe. Il est des cas où ce col est rempli d'une infinité de ces kystes, qui sont tout très petits, d'égale diamètre et implanté par centaine dans le tissu du col. Quelques uns font une légère saillie du dessous de la muqueuse." *

"Dans l'épaisseur du museau de tanche, nous avons trouvé, en grand nombre, de petits corps blancs, durs comme de cartilage adhérent intimement au tissu environnant et moins gros qu'une lentille; tandis que sur divers autres points de la matrice on en voit égaler le volume d'un œuf, celui du poing et même celui de la tête d'un homme." †

The foregoing observations prove that there are at least four distinct varieties of tumours of the uterus, none of which are malignant in their nature, to which the term polypus has been applied: 1st, the fibrous; 2dly, the follicular or glandular; 3dly, the cystic or vesicular; and 4thly, the mucous tumour of the uterus. To these ought perhaps to be added, that variety of tumour of the uterus which consists of erectile tissue, or of cells and dilated arteries and veins.

* Andral Anatomie Pathologique, Tom. III. p. 691.

† Boivin et Dugès Traité Pratique, p. 314.

Before the middle of the eighteenth century, few facts of any importance had been ascertained respecting the origin and structure of polypus of the uterus. The older writers included under the term polypus all the different tumours of the uterus which have now been described, the greater number of the organic affections of the os and cervix uteri of a malignant nature, and also fleshy moles or ova in a diseased condition. The confusion and obscurity in which the pathology of uterine polypi have been so long involved, may be chiefly attributed to the circumstance that few opportunities have been enjoyed of investigating their structure before it has been destroyed by inflammation, or sloughing produced by natural or artificial causes.

With respect to the treatment of the various tumours which have now been described, I have few observations to offer. Iodine, mercury, and all other remedies have little effect either in arresting their growth or promoting their absorption. Women who have fibrous tumours formed in the walls of the uterus, should avoid mechanical pressure of the hypogastrium, violent bodily exertion, and every other cause which may excite inflammation or a determination of blood to the organs within the pelvis. Where congestion has taken place, it should be removed by local blood-letting, mild cathartics, and anodynes. Profuse uterine hemorrhage should be controlled by rest in the recumbent posture, cold applications to the

hypogastrium, and the internal use of the acetate of lead.

When any of these tumours pass through the os uteri into the vagina, they may be removed by the ligature or by the knife. If the root is soft and slender, the tumour may easily be twisted off by the forceps. In the course of the last twenty years, Dupuytren states, that he has removed two hundred uterine polypi by excision. Hemorrhage has only occurred twice in all the cases, and in both instances it was permanently arrested by the tampon. In eight or ten cases, after the application of the ligature, death took place from the absorption of pus into the system.

Where the root of the tumour is large and vascular, I am of opinion that a ligature should previously be passed around it, at as great a distance from the os uteri as is compatible with the removal of the disease.

Since this paper was read, Dr. Ferguson, Professor of Midwifery, in King's College, London, has communicated to me the following interesting cases and observations.

I.—“A midwife finding that labour did not advance sent for a practitioner, who examined and ascertained, as he thought, that the child's head was jammed in the pelvis, and required for its extraction the aid of the forceps. These he applied, but ineffectually. He left the patient, imagining that as he had succeeded in bringing down the head somewhat lower, the uterine

pains would expel it. And, indeed, some hours afterwards the scalp gave way, the brain was squeezed out, and the putrid full grown child was extracted by the midwife. Two days after this, I was called in to see this person, who had passed a polyp larger than the doubled fist, and who now was dying of peritonitis. She sunk in a few hours, and we found on examination that the polyp had been attached above the cervix uteri; that where the peduncle had adhered was a hole which penetrated into the cavity of the peritoneum, and that probably the inflammation of that membrane had been caused no less by the escape of the discharge through this orifice than by the injuries received during labour.

“It was clear the forceps had been applied to the polyp and not to the head of the child, and that the traction had probably torn the root of the peduncle, which subsequently ulcerated the uterus.”

II.—“A woman who had borne many children, and who had menorrhagia habitually, became pregnant, and the midwife sent for me, not knowing the presentation. I found what first appeared to me to be the scrotum, but a more careful examination proved that the head was presenting though it was still very high. I traced the tumour into the os uteri, near which it hung by a slender stalk. It was soft and compressible, though as large as a hen’s egg. The head descended easily, after I squeezed the tumour against the side of the pelvis. The child was born alive. The placenta came away naturally though tardily, but the most frightful hemorrhage I ever witnessed ensued. She was rescued, however, but with great difficulty. I saw her twelve months after this. The tumour was still there, retaining its usual characters of size and consistence. She would not permit me to remove it.

“I relate this case, as it has always suggested to me the connexion of polyp and hemorrhage; and, secondly, because I think it to be a polyp of the nature of those you describe under the name of disorganized Nabothian glands.”

FURTHER REMARKS
ON THE
ULCERATIVE PROCESS.

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READ 9TH DECEMBER, 1834.

IN the last volume of the Transactions published by the Medico-Chirurgical Society, it did me the honour to include some observations on the ulcerative process, as it occurs in joints. My object in that paper was to point out the mode in which the cartilage covering the articular ends of bones is absorbed in some forms of joint disease, and to shew that the cartilage was not absorbed per se, but through the agency of a structure probably evolved for the special purpose of completing that process.

Three forms of disease were described, which appear to illustrate this mode of action ; viz., 1st, the loss of articular cartilage that attends upon the chronic inflammation of the synovial membrane ; secondly, the more active destruction of the articular cartilage that attends acute inflammation of the joint ; and thirdly, the absorption of cartilage that accompanies

strumous disease of the cancellated structure of bone.

It may be recollected, that a fourth process of ulceration of cartilage was adverted to, in which that structure appeared to undergo a change in its organization independent of foreign agency. This form of ulceration of articular cartilage I did not at that time enter upon, as it appears to me to be an action altogether different from absorption, and analogous to the softening of the intervertebral substance. The term disintegration was employed in contradistinction to absorption; the one being a loss of substance from an absorbent action, the other being the result of a disorganization of texture. It is this latter form of action to which I wish to direct the attention of the Society. It is the primary ulceration of cartilage described by authors.

In speaking of ulceration in the former paper, I have considered it, as it is usually understood to be, an action of the absorbents by which the parts that lose their integrity are absorbed and carried into the general circulating mass. Observation, however, of this process, under its varied modifications, has led me to regard ulceration, in its strict signification, not as an absorbent action, but as a process of degeneration, or a softening of tissue, analogous to that action by which the medullary part of the brain and scrofulous tubercles become converted into a purulent mass.

In the early formation of abscess, and in the acute phlegmonous suppuration of cellular membrane, this softening process may be satisfactorily observed. The first step which nature takes in forming an abscess, is a deposit of the solid or fibrinous part of the blood, either mixed with or free from the red particles, according as the action is acute or chronic. This solid deposit remains for a certain period unchanged, but at length becomes softer in consistence, and towards the centre exhibits all the characters of completely formed pus. The cavity thus formed either increases in size by the same process, or the sides of the cyst become organized, and secrete pus. Thus the fluid in an abscess at first is the product of a softening process ; afterwards it is a secretion from the vessels of the walls of the cyst. In phlegmonous inflammation of cellular membrane, an incision into the diseased texture demonstrates the several stages of the deposit, from its first formation as a firm yellowish substance to its gradual change into a softer mass, and its final conversion into well formed pus.

But in many diseases the softening extends not only to fibrinous or tubercular deposits, but also to the organized tissues of the body ; and under its influence large portions of vascular tissue become broken down and mixed with the purulent depôt. In the red hepatization of the lungs under pneumonia, the cells of the organ are infiltrated with a solid deposit in sufficient quantity to render the lung

solid, but still allowing the natural vascular tissue to be distinguished. In the more advanced stage of pneumonia, or the grey hepatization, the vascular tissue of the lung is no longer discernible; it is blended with the fibrinous deposit, and presents a uniform greyish solid mass. If time be allowed for the deposit to soften down, the natural texture of the lung is found to have lost its consistence, and breaks down under slight pressure; and in many instances appears to be resolved into a puriform mass. The same train of actions may be observed in the chronic tubercular disease of the lung, and in the strumous disease of absorbent glands. In a scrofulous gland, the deposit of tubercular matter, the softening process, the gradual blending of the natural tissue of the gland with the scrofulous mass until it can no longer be distinguished, can each be clearly followed, until the whole is converted into a mass of pus, here and there intermixed with the debris of the original glandular structure.

Ulceration is a process analogous to the softening attending suppuration; it is a degeneration of tissue, a change in the affinities existing between its component parts, by which it becomes changed from a solid organized texture to a fluid inorganic mass. It differs from gangrene in being a vital action; while gangrene, by at once producing death in a part, prevents any such change taking place. In gangrene, the supply of blood to the part altogether ceases, while the integrity of tissue is preserved; under ul-

ceration, the circulation in the vessels continues during the action, and the part still belongs to the living mass, and remains under the influence of vital action until its separation is completed.

Such disintegration of organized tissues, and their conversion into their original elements, is consistent with the usual operations of nature; and for animal structures to resume their former elementary state, and again to become the fluid of which they were originally composed, is by no means an unnatural transition.

The integrity of animal bodies is preserved by a vital force acting on the component parts of living tissue, as chemical affinities produce and preserve the various heterogeneous compounds. What the peculiar agent may be that is employed in preserving this integrity of vital structure, admits not of demonstration. Probably it will be found to be the organic system of nerves acting to the same purpose as electric agency does in maintaining the ordinary chemical combinations; electric agency in the inorganic world being the type of the nervous influence in the animal. We do not possess the means of reducing this proposition to a demonstration, for the division of a nerve only cuts off animal sensibility, leaving the organic sensibility unimpaired; as is shewn in the phenomena of inflammation being as perfect in paralysed parts as in those retaining sensation. A change in the nervous energy supplied to a part may

probably be the cause of that kind of disorganization of tissue termed ulceration.

My grounds for this view of ulceration appear to be upheld, both by the want of proof that absorption is in any way concerned in the formation of an ulcer, as well as by evidence of it being a work of disintegration or degeneration of tissue. It is probable that ulceration was first assumed by Mr. Hunter to be an act of absorption, by extending the analogy observed between the progressive and interstitial absorption to the ulcerative process. But the circumstances under which the former takes place differ from the occasions in which the latter is called into play: in progressive absorption Nature can effect her object in no other way. If a bone, or any soft part, receive the continued pressure of an aneurismal sac, it must yield to the pressure, and there is no way, but by absorption, of getting rid of the structure to be removed. Here, therefore, the absorbents must be set to work, and the part removed is carried into the general mass of fluids. But it seems unreasonable to apply the same reasoning and the same mode of action to the removal of textures by an abscess in its approach to the surface. Here clearly a different action takes place, and although some interstitial absorption may be produced by the pressure, each part in its turn undergoes an inflammatory action and the process of degeneration of tissue, and gradually adds to the depôt of pus. The distinction and contrast between these two actions is shewn in

the change that takes place in the intervertebral substance of the spinal column under the pressure of an aneurism, and that which occurs in scrofulous abscess or ulceration.

In the progressive absorption produced by the pressure of an aortic aneurism on the spine, it may be often noticed that the bony part of the column is extensively destroyed, while the intervertebral substance remains entire, and even projects unchanged amidst the eroded bone. The laws that regulate absorption enable the comparatively inorganized fibro-cartilaginous tissue to remain passive under the pressure, while the more highly organized bone is irritated by it, and is gradually absorbed under its influence. But in scrofulous ulceration, the intervertebral substance is not unfrequently the part in which the action of degeneration begins; large masses of the fibro-cartilaginous structure degenerate and disappear, cavities containing pus are found in its substance, and the broken-down fibres surrounding the walls of the abscess, sufficiently attest the nature and progress of the action. Under the one action, the intervertebral substance is the first to yield; but the other, which is a process of absorption, it resists.

The supposition that nature carries into the circulating system noxious matters and poisoned tissues, which can be more effectually and more safely got rid of by other means, is carrying analogy beyond the bounds of probability. But if the formation of

an ulcer be an act of absorption, the parts that are removed in the formation of a chancre are so disposed of; the absorbents, in forming a chancre, carry into the system tissues tainted by the venereal poison, and must therefore in every instance contaminate the whole mass of circulating fluids. That an action so deleterious to the system should uniformly accompany the formation of every venereal sore, is highly improbable; and if it were so, a bubo ought to be one of the earliest accompaniments of chancre. But during the ulcerative stage of chancre, the glands in the groin usually remain free from infection: it is when the ulcerative stage is at an end that the gland enlarges and bubo forms. In other words, when the absorbents are most actively engaged in producing the ulcer, and in carrying the poisoned mass into the gland, the latter exhibits no sign of irritation; but when the absorbents are inactive the gland begins to enlarge. It is a fact which every surgeon can bring to his mind, that during the most active stage of phagedænic venereal sores on the penis, a gland rarely enlarges, and that bubo is only to be apprehended during the granulating stage of chancre.

Ulcers of all kinds, if closely watched in their formation, clearly exhibit the breaking up of the tissue, and its gradual conversion into pus. In the earliest stage of an ulcer, before the vesicle has burst or the skin given way, the extent of substance lost is always compensated for by the amount of fluid formed. In its progress, when rapid, and when a

large portion of structure is quickly destroyed by ulceration, a corresponding quantity of pus may be always seen to occupy its place; and when the action is more chronic, as in fibrous structures, the debris of the tissue can be seen mixed with the purulent fluid. The same process can also be seen in its several stages in the separation of a dead from a living part, in the formation of "the white line of separation." This "white line" is usually regarded and described as an adhesive process, formed for the purpose of absorbing the margin of the living texture that adjoins the dead part, and thus casting off the latter. But it will be found to be analogous in all respects to what takes place in the suppurative process that attends the commencement of an abscess. The white line is an effusion of the fibrinous or coagulating part of the blood, which in part assists in sealing the blood-vessels, and afterwards in forming granulations, and in part softens down and effects the separation of the gangrenous mass. Observation of this process will prove that this, like others that have been improperly attributed to absorption, is an act in which the absorbents do not take a part.

A carious tooth is a familiar example of ulceration. The breaking up of the bony part of a tooth is a living action, analogous to that by which ulcers of soft parts are formed: the gradual destruction of its texture may be observed, from its first change to its complete degeneration. That it is a living action may be also inferred from the circumstance that no

such change has been observed in a tooth, after its removal from the body. Dead teeth do not decay.

I had lately a remarkable opportunity of examining this process in suppuration of muscular fibre. A man was admitted into the hospital labouring under symptoms of fever, and affected with violent tetanic spasms of the muscles of the extremities and back. On examination after death, numerous collections of pus were discovered in those muscles that were affected during life. The pus was not found in the interstitial cellular tissue, as it is in ordinary abscess, but in the midst of degenerated muscular fibre. In the longissimus dorsi muscle I found several collections, varying in size from a pea to a filbert, consisting of a yellowish-red pus, and surrounded on all sides by the truncated ends of muscular fibre in a state of ulceration. The cyst that forms the parietes of a common abscess was wanting; the loose end of each muscular fibre that floated in the pus looked yellowish, and was softening at its extremity into a similar coloured opaque pultaceous mass. In tracing the fibre from where it was healthy into the depôt, it presented traces of regular degeneration, gradually losing the appearance and consistence of muscle, until it acquired, at the loose extremity, all the appearance of the pus in which it terminated.

It is difficult to explain or to reconcile the action of some remedies with the supposition of absorption

being concerned in ulceration. One of the most powerful remedies that we possess, and that exerts a remarkable control over the ulcerative process, is iodine. The most active phagedænic ulcers, that threaten the destruction of parts, are often found to yield in a surprising manner to the influence of this medicine, and to put on a healthy granulating appearance. And yet iodine is thought to act powerfully in increasing the action of the absorbents; tumours of considerable size often yielding to its action and becoming absorbed. How is it, that in the healing of an ulcer it checks and puts a stop to the absorbing process, and in the case of a tumour quickens the action of the absorbents and gets rid of the mass? Here are two actions of a remedy opposed to each other, and inexplicable so long as ulceration is regarded in the light of absorption. In the same person, and often on the same limb, we see the beneficial effects of iodine in the arrest of a spreading cachectic ulcer, and the absorption of a venereal node or periosteal effusion; two actions that present a paradox to those who view ulceration as effected through the agency of the absorbents. But the action of this and other remedies that arrest the progress of ulceration, is effected through another medium than the absorbents; it would seem to depend on some additional nervous or vital power imparted to the ulcerating surface, by which its vital energies are reinforced, and which enabled it to resist those repulsive forces that tend to disorganize it.

As the disposition to ulceration accompanies inflammation in persons whose constitutions are morbidly irritable, or in whom action is joined with debility, the effect of local applications, as well as of internal remedies, is more easily understood under this view of the process. The action of argenti nitras in healing an ulcer of the cornea affords an illustration in point. The breaking up of the texture of the tunica adnata and anterior laminæ of the cornea occurs in weak scrofulous children; the application of the nitrate of silver destroys the surface which is in a state of impending disorganization, and by imparting a healthy energy or stimulus to the other parts of the ulcer, checks the ulcerative disposition, and brings the ulcer into a healing state. Such is the mode of action, probably, by which local remedies generally stop the destructive progress of an ulcer.

I have given this general view of the ulcerative process, as it was necessary in order to render clear the real nature of the action, as it occurs in joints, and to make intelligible the distinction which exists between the act of absorption and that of ulceration. The purport of my former observations on this subject, was to illustrate the mode in which nature effects the absorption of articular cartilage in some forms of disease, but especially in that chronic form of action usually regarded as strumous. My present object is to point out the difference between this mode of

removing the cartilage, and the ulcerative or destructive process.

The distinction is one that cannot fail to strike the pathologist. The one is a repairing process, established with a view to the ultimate ankylosis of the joint, and by an efficient provision to prevent an inflammatory process that would otherwise end in ulceration and suppuration. A membrane is gradually developed, by the agency of which the cartilage is absorbed, and which afterwards becomes the medium of ankylosis; thus the destruction of the joint is often prevented.

But ulceration of the cartilage is effected in the same manner as an ulcer is formed in soft parts; it is a destructive action that sooner or later is followed by suppuration of the joint. It commences in the structure of the cartilage itself, which, no longer under the influence of those forces that unite its integral parts, breaks up and becomes converted into a purulent mass, which mixing with the synovia of the joint, irritates the synovial membrane to inflammation, and ultimately to suppuration and ulceration.

Ulceration of cartilage, however, as a primary disease, is a much less frequent occurrence than absorption through the intervention of the membrane, described in my former observations on this subject. I do not remember to have examined a joint, that had been the subject of ordinary chronic inflammation,

in which this membrane was not found more or less developed. Nor have I seen an instance of chronic inflammation in the early stage of strumous disease, in which degeneration or ulceration of the cartilage existed as the primary action.

Chronic inflammation, however, after existing for many months or years in strumous subjects, may, and often does, become acute, and ulceration sometimes in such cases supersedes the absorbing process, and abscess rapidly forms. When such a joint is examined, the whole cavity is found to present the appearances (described in my former paper) accompanying the development of the membrane, and in one or more points signs of recent acute action are visible, in which, instead of a membrane being formed, the cartilage is found ulcerated or broken up, giving rise to abscess, and often to the necessity of amputation.

Nature endeavours so long as she can to remove the cartilage by absorption, in order to prevent the necessity of suppuration. For primary ulceration of cartilage leads to the formation of abscess. The breaking up of the tissue of the cartilage is equivalent to the suppurative process in softer tissues; it creates a product that must be got rid of; the synovial membrane is irritated, and ulceration with abscess is the result. In absorption of the cartilage through the intervention of the membrane, suppuration is not a necessary attendant, and we sometimes find the

whole process completed without abscess. But where the membrane is wanting, the process is analogous to the degeneration of soft parts, and is sooner or later followed by suppuration.

It is not intended to imply that every ulcerative process is uniformly followed by abscess. For in the instance of the cornea, ulceration sometimes takes place on its inner surface, and the products of the ulcerative process mixing with the mass of aqueous humour become so far diluted that they scarcely irritate the lining membrane of the anterior chamber. And it may possibly happen, that the same exception may take place in joints; and that the debris of the cartilage, reduced by long action to a perfectly homogeneous fluid, may mix with the synovial fluid of the cavity, and, producing no irritation, may be absorbed. The analogy, however, between the anterior chamber of the eye and other cavities will not strictly hold, as the former is the only cavity constantly distended with fluid, and therefore offers more than any other cavity the opportunity of the product of ulceration being absorbed.

The diseases in which the texture of the cartilage primarily undergoes ulceration, are, for the most part, acute from their commencement. The inflammation that follows wounds of joints often leads to the rapid ulceration of the cartilage and to burrowing abscess. In these cases the cartilage is found often to be extensively destroyed, and the bone laid bare without

any appearance of a membrane for the purpose of absorption. The remaining cartilage sometimes exhibits different stages of approaching disorganization; in some parts retaining its natural form, consistence, and appearance, in others being soft and spongy or even pulpy; and in those parts most advanced towards ulceration the fibre of the cartilage can be seen to separate, and flakes here and there appear to be almost detached. In the knee joint, under these circumstances, while the larger part of the joint presents the most extensive disorganization, the edge of the patella and femur occasionally shew the commencement of the absorbing process, which, as the inflammation increased, seems to have been superseded by the ulcerative.

The chronic inflammation of the synovial membrane, attended with absorption of the cartilage, not unfrequently becomes acute from accidental causes, and leading to ulceration quickly disorganizes the joint. Both ulceration and absorption may here be seen to operate. In some parts may be seen the membrane adhering to the cartilage or to the denuded bone, in various degrees of activity or vascularity, according as its office is completed or in progress; and in others, a total loss of the cartilage may be observed without the development of a membrane. It is not unusual for one half of a knee joint to be losing its cartilage by absorption, while, by a process of inflammation subsequently excited, the other is in a state of active ulceration. On one side the cartilage is furnished with the absorbing membrane,

which sometimes spreads over the whole of that side of the cavity, and protects it from the devastating process of ulceration that is at work on the other side of the joint, which is filled with pus and the remains of the disorganized cartilage. In persons who have become extremely irritable and weak, the ulcerative action is so determined, that the membrane itself is sometimes found in a state of ulceration.

The same process of degeneration may be also observed in the chronic affection of the semilunar cartilages of the knee joint, especially when they happen to be the incipient seat of disease. The softening of the fibro-cartilaginous texture and its gradual conversion into a puriform mass may be observed in every stage. I have seen instances of this form of disease in which the action appeared for a long time to be confined to one of the articular cartilages, which was breaking up; while chronic inflammation was gradually extending to the neighbouring parts of the joint, and the vascular membrane could be seen beautifully extending itself on the adjoining cartilage of the condyle of the femur, for the purpose of defending it from the dangers of threatening ulceration.

Another form of inflammation that is attended with the primary ulceration of cartilage, is that which occurs in very cachectic subjects, and assumes the character of acute rheumatism. It often supervenes on subacute abscesses in different parts of the body, and is therefore most usually met with in those whose

systems have been kept in a state of continued excitement, and whose constitutions have been reduced by excesses. It attacks more than one joint, and is to be distinguished from common rheumatic inflammation by the peculiar state of the patient's constitution, and the disposition to degeneration of tissue evinced in the previous occurrence of several successive abscesses. The joint is much swollen and distended with fluid, exquisitely sensitive when touched, and sometimes opens by ulceration and discharges its contents. Or if the action does not proceed so far, the cavity is found on examination to be filled with an opaque synovial fluid, and the cartilage presents one or more spots of ulceration.

In stating my view of the two modes in which articular cartilage is removed under disease, I have advanced doctrines opposed to those of Mr. Hunter, and in some points at variance with the opinions of Sir Benjamin Brodie. To differ from so high an authority as the one, and so distinguished a pathologist as the other, will naturally subject my opinions to all the severity of criticism, and to a suspicion, perhaps, of their unsoundness. I have stated, however, nothing but what a long course of observation joined to ample opportunities has forced on my attention; whether they are the true exposition of the processes of nature, time, the only test of truth, will decide.

SOME REMARKS
ON
MAL-FORMATION
OF
THE INTERNAL EAR,
BEING THE RESULT OF
POST MORTEM INVESTIGATIONS
PERFORMED
IN FIVE CASES OF CONGENITAL DEAFNESS.

By MR. EDWARD COCK,
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COMMUNICATED BY
DR. BRIGHT.

READ DECEMBER 9TH, 1834.

PERHAPS there is no part of the human body which has so little engaged the attention of the pathologist, or which has afforded such slender encouragement to his research as the ear. The minute delicacy and complicated nature of the organ, the difficulty which attends its examination, and the patience required for a thorough investigation of its different parts, will perhaps account for the great obscurity which at present envelopes the pathology of congenital deafness.

When structures so numerous and diversified, are found assembled within a small portion of bone of compact texture and ivory hardness,—when bones, ligaments, joints, muscles, membranes, secreting tissues, vessels, nerves, and fluids are compressed within so small a compass,—it may be conceived how much time and labour must be expended, and how many ears must be dissected, before we can gain even a superficial and imperfect knowledge of this organ in its healthy state, and how difficult to appreciate every morbid change, or every congenital mal-formation which possibly may occur in its structures.

Under these circumstances, it is not surprising that congenital deafness should have been almost universally ascribed to paralysis of the auditory nerve, although I believe there is scarcely a case upon record in which the nerve has been found altered in its size or texture, unless through the agency of tubercles, hydatids, or some other cause producing mechanical pressure or lesion of its substance.

Saunders, in his book, “On the Anatomy and Diseases of the Ear,” gives but one case as affording an explanation of the cause of congenital deafness. In this instance the labyrinth was occupied by a soft cheesy substance, although I think it may be questioned whether this was an original formation, or a subsequent deposit of scrofulous matter.

Itard, who has published a voluminous work on

the diseases of the ear, mentions two cases of congenital deafness, in which the tympanum was filled with a calcareous deposit; also two others, in which a morbid growth had taken place from the membrane lining that cavity, “*Végétations produites par la membrane qui la tapise* ;” and a fifth, where a gelatinous secretion occupied not only the tympanum, but also the canals of the labyrinth. He likewise speaks of a child, where the auditory nerve was converted into a substance resembling mucus, and of a man, in whom it was shrivelled up and reduced to a mere thread.

Pinel relates the result of dissections, in which the water of the labyrinth was altogether deficient, leaving the cavities dry and empty; but these would appear to be cases where deafness occurred in after life, and not where the defect was co-existent with birth.

Accounts are also on record, of congenital deafness being caused by an extension of the true skin over the *membrana tympani*, by the presence of polypi in the *meatus externus*, &c.

At the request of Dr. Babington, who is physician to the Asylum for the Deaf and Dumb, I have, within the last two years, taken the opportunity of examining the temporal bones of five children who died in that institution, and in two of these have detected such palpable deviations from the normal

structure, as would indicate that a congenital malformation does exist oftener than is generally supposed, and therefore that to this cause, many cases of deafness may reasonably be ascribed.

The subjects examined were all children who died of strumous diseases of the thoracic and abdominal viscera. In three instances, one or both ears were the seat of scrofulous ulceration, affecting the tympanum and meatus externus, with partial destruction of the membrana tympani. In one case, the cavity of the tympanum, together with the mastoid cells, was completely filled with the thick cheesy deposit of scrofula, whilst a similar affection pervaded the whole cancellated structure of the petrous bone. The connexions of the ossicula auditûs were destroyed, but the bones themselves remained entire. I merely mention these facts as indicating the strumous habit of body, which I believe prevails very generally among the deaf and dumb; for as these affections could have existed but for a short time previous to death, they can hardly be supposed to have had any connexion with the congenital defect in the organ of hearing.

I may also remark, that in all the cases examined, the petrous portions of the temporal bones exhibited more than the usual varieties of size and shape. In some the bone was so deficient in particular spots as barely to cover the internal cavities, whilst in others there appeared a preternatural osseous development.

In one instance, the petrous bone of a child twelve years old, exceeded in size, hardness, and compactness of structure, that of any adult which I have witnessed.

The mal-formation which I discovered in two instances, may be described in a few words. It consisted in a partial deficiency of two of the semi-circular canals. The extremities of these tubes opening into the vestibule were perfect, but the central portions were impervious, or rather did not exist at all. In the first case, I had the opportunity of examining the ear from one side only*. The vertical and oblique semi-circular canals were both impervious at their central portions. The accompanying diagram will render the state of the parts easily understood, making some allowance for the false perspective which I have had recourse to, in order to exhibit all the canals in one view.

The defective portions of the canals are traced out with dotted lines.

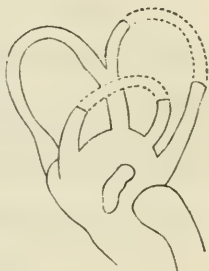
In the second case both ears were examined. On the right side, the middle portions of the oblique and vertical canals were wanting, the bone present-



* This examination was made in the month of November, 1832.

ing an appearance like that already described. On the left side, the horizontal and vertical canals exhibited a similar imperfection. The scala tympani likewise was terminated, at its larger extremity, by a bony septum, which separated it from the tympanum, and occupied the situation of the membrane of the fenestra rotunda.

With the exception of these mal-formations, and the scrofulous affections of the tympanum mentioned above, which were probably of recent occurrence, no deviation from the healthy state could be discovered in either of the five subjects examined. The Eustachian tubes were pervious; the bones, muscles, and membranes, entire and natural; the labyrinths were filled with their transparent fluid. In no instance did the auditory nerve present any peculiarity, although carefully traced from its origin to its distribution. The chorda tympani was present in every instance, but I cannot vouch for the integrity of all the little nervous fibrillæ, which pass into the tympanum and ramify on its walls, requiring the aid of a microscope for their dissection.



In addition to these two cases of mal-formation I may state a third, which was dissected by my friend Mr. Dalrymple, and is now in his possession. In this instance, the aqueduct of the vestibule was so large as to admit the passage of a small probe,

whereas, in the natural state, a fine hair can with difficulty be introduced into the canal.

The present state of our knowledge, respecting the function which the different parts of the ear exercise in the appreciation of sound, is so vague and limited, that it is impossible to hazard even a conjecture, as to the effect likely to be produced by the mal-formations I have just described, for, until we can assign a probable office to the various divisions of this complicated organ, it is useless to attempt more than a plain statement of facts. Little doubt, however, can be entertained of the importance of the semicircular canals, and that they are essential, not only to the perfection of hearing as enjoyed by man, but to the appreciation of sound itself, as possessed by inferior beings, probably not endowed with the same powers of discrimination; since we find these tubes fully developed in many of the lower animals, where the tympanum and cochlea are altogether wanting, or exist only as rudimentary appendages.

The earliest formation of an acoustic apparatus is found in the crustaceous animals, and consists of a membranous sac filled with fluid, and containing a little bone or some cretaceous matter, on which the auditory nerve becomes distributed. Such a structure is seen in the crab and lobster, and appears to correspond with the vestibule of the mammalia.

If we ascend the scale of organization, the next

class, fishes, present a development not only of vestibule, but of three semicircular canals, which in some of the tribes are very large.

The reptiles are furnished with an organ in most respects similar to the fishes, but in some of them, a faint trace of a rudimentary cochlea and tympanum becomes apparent.

The succeeding class, or the birds, have the vestibule and semicircular canals perfectly developed; they likewise possess a cochlea approaching in its form to the spiral canals which are found in the highest orders, together with a tympanum and external meatus.

Lastly, the class mammalia exhibits, with slight modifications, the perfect development and elaborate construction which characterize the ear of man.

From this brief and consequently general sketch of the ears of animals, it will be seen that there is only one class (and that the lowest in which an auditory apparatus can be traced) which does not possess semicircular canals: from which we may be led to infer, that, with the exception of the vestibule, they are, of all the parts composing this complicated organ, those most essential to the appreciation of sound.

With respect to the last case of mal-formation,

which I quote upon the authority of Mr. Dalrymple, perhaps something like an explanation of the possible cause of deafness may be ventured upon. The aqueductus vestibuli may probably serve the office of a safety-valve to the delicate structure of the labyrinth, and, under intense vibration, may suffer a small portion of fluid to escape from the vestibule, when the motion imparted to the water through the medium of the fenestra ovalis, is so violent as to endanger the integrity of the nervous membrane lining the cavities; but if, as in this case, the aqueduct be preternaturally large, every, even the slightest, vibration will be attended with a discharge of fluid through its canal, and thus the auditory impression, which, through the agency of the water, ought to be propagated throughout the whole extent of the labyrinth, will reach no further than the vestibule itself.

St. Thomas's Street,
October, 1834.

Since the foregoing remarks went to the press, another post-mortem examination of a child, from the Deaf and Dumb Asylum, has furnished results, which I think tend to throw additional light on the pathology of congenital deafness.

In this case, not a vestige was to be found of the fenestra rotunda on either side, the usual situation of the membrane being occupied by solid bone.

The effect of such a mal-formation would probably be, to prevent the vibratory impression received on the membrane of the fenestra ovalis from being propagated through the vestibule and the canals of the cochlea ; for if we consider the labyrinth of the ear as a long osseous tube, commencing at the fenestra ovalis, and terminating at the fenestra rotunda, (and thus closed at both extremities by membrane,) then if a solid structure be substituted for the yielding material, which, in the natural state, closes one extremity of the canal, viz., the round opening, the motion imparted by the ossicula to the membrane of the fenestra ovalis, would no longer produce that undulation of the fluid through the labyrinth, which appears essential to the appreciation of sound.

The temporal bones of this child were exceedingly large, although soft and spongy in texture. The cavities were more than usually capacious, and the Eustachian tubes presented a remarkable development, being three or four times larger than common. On one side, the aqueduct of the vestibule readily allowed the passage of a large bristle, on the other side, the canal could not be traced through the bone, although its two extremities were more than usually expanded. Suppuration had taken place in one tympanum.

Aug. 10, 1835.

EXAMINATION
OF THE
ORGANS OF HEARING,
FROM THE BODY OF A BOY, AGED 13 YEARS,
WHO HAD BEEN THE SUBJECT OF
CONGENITAL DEAFNESS.

By J. THURNAM, Esq.,
MEMBER OF THE ROYAL COLLEGE OF SURGEONS IN LONDON.

COMMUNICATED BY
DR. SIMS.

READ JANUARY 13TH, 1835.

WITH the exception of traces of a rather turgid condition of the vessels ramifying on the promontory, more particularly of the right tympanum, the appearance of both these cavities, with that of their complicated apparatus of bones, muscles, nerves, and lining membranes, was perfectly natural. The openings into the mastoid cells, on the one hand, and into the Eustachian tubes on the other, were also as in the healthy subject.

The labyrinth of the right side was examined, by making a section of the petrous bone with the saw. The cochlea, thus divided, was seen to be filled with a matter, which, from its appearance, might have

been denominated "caseous." This, however, I am convinced, merely arose from the minute saw-dust of the hard bone, having formed a kind of paste by admixture with the aqua labyrinthi. The free edge of the lamina spiralis possessed a highly vascular appearance. The periosteum lining the vestibule and semicircular canals, had evident traces of vascularity, though perhaps scarcely more than may be esteemed as normal; it was lubricated by its proper aqua labyrinthi. The horizontal semicircular canal was imperfect on this side, in about the outer third of its extent; but what, perhaps, might be regarded as an abortive attempt at its formation, existed, as is attempted to be shewn. I did not discover any trace of sacculus or utriculus vestibuli, or of membranous semicircular canals. From the soft state of the acoustic nerve, it was impossible to make out the points of its distribution.



In order to avoid the probable source of fallacy alluded to, I did not employ the saw in the examination of the labyrinth of the left side, but, by means of a strong knife, divided the petrous portion of the bone with a single stroke of the hammer. I thus obtained a view of the vestibule, in which, near the opening of the scala vestibuli, and extending into that canal, there was a minute quantity of a calcareous-like incrustation, closely adhering to the periosteum, and which probably was the remains or rudiment of the "otolith" of Breschet. Here,

likewise, no utricle or sacculus was met with ; there however were very minute, gelatiniform, membranous, semicircular canals. In the cochlea of this side, there was no appearance of anything like a caseous deposit. The osseous semicircular canals were complete on this side.

With respect to the apparent absence of the greater portion of the membranous labyrinths, I must confess that I am not prepared to insist much upon the circumstance ; as, from the highly delicate structure of the part, coupled with the length of time which had elapsed since death, it is more than possible, that, notwithstanding every care, they may have been accidentally removed during the process of cutting the bone in the one instance, and sawing it in the other.

Although records of dissections of the ear, in cases where congenital deafness had existed, are far from numerous, yet a few are to be met with, scattered through the pages of our medical literature. From our ignorance, however, of many points connected with the physiology of the organ, it is in many cases impossible to say, what share the alleged deviations of structure have had in the production of the deafness. There can, however, be little doubt, that those affecting the labyrinth are of primary importance.

The present case is interesting, from presenting

us with the imperfect development of one of the semi-circular canals, as the only cause, to which the deafness can, with any probability, be ascribed. As these canals were perfect on the other side of the body, this case would appear to indicate, that the presence of this mal-formation in one of the organs, is sufficient to prevent the exercise of the function of hearing; but before this can be safely assumed as certain, it will of course be necessary, to have the view established by the result of an extended series of observations, directed to this especial point. It at least shews the necessity of future enquirers into this subject, invariably dissecting both the organs.

From the observations of Dr. Haighton* and Mr. Cline†, it results, that the only appearance sometimes met with in these cases, is that of a caseous substance in one or more of the cavities of the labyrinth. I allude to this, in order to take the opportunity of pointing out a source of fallacy arising out of the mode of conducting the examination, and to which, as I have related, I was myself exposed.

The existence of calcareous bodies in the vestibular cavity of fishes has been long known to comparative anatomists; but it is only of late, that it has been shewn by Breschet, that these have their analogue in the human species and in all the mammalia, in the form of two minute calcareous bodies, which, accord-

* Mem. of the Medical Society, Vol. III. pp. 1—15.

† Sir A. Cooper, in the Phil. Trans. for 1801, p. 447.

ingly as they are of a hard or soft consistence, he denominates otolithes and otoconies *. These bodies, which are situated in the centre of the sacculus and utriculus vestibuli, and appear to be suspended in the aqua labyrinthi, through the medium of minute nervous fibrillæ, have not attracted that attention from British anatomists and physiologists, which, from the interesting nature of the question, might reasonably have been expected; but they deserve to be pointed out here, as liable to mislead the morbid anatomist who is unacquainted with their existence. Itard gives a case of congenital defect of hearing, in which, the presence of small portions of calcareous matter in the vestibule and tympanum, is alleged as the cause of deafness. Whether or not the semi-circular canals were examined does not appear †.

* *Annales des Sciences Naturelles*, xxix. 99.

† *Traité des Maladies de l'Oreille*, &c. Cooper's Surgical Dictionary, 1830, p. 432.

A RELATION
OF
SOME CASES
OF
MENTAL DERANGEMENT,
SUCCESSFULLY TREATED
BY THE
ACETATE OF MORPHIA,
BY EDWARD J. SEYMOUR, M.D.,
PHYSICIAN TO ST. GEORGE'S HOSPITAL.

READ DECEMBER 23D, 1834.

It has been observed by many persons accustomed to the investigation of the bodies of maniacal patients after death, that the proportion in which appreciable organic disease is found is very small, compared with those cases in which no distinct alteration can be discovered in the substance of the brain, its membranes, or its vessels ; and that organic disease of the brain has been seen to exist to the greatest extent without necessarily impairing the functions of the mind.

Physicians have long since discovered, that inflammatory action, either acute or modified, which has long been looked to as the universal agent in the pro-

duction of disease in other parts of the body, has rarely any thing to do with the perverted perceptions and deranged appetites of the lunatic. To each of the great systems which maintain the body in health, peculiar functions are allotted, and the alterations of these functions constitute the peculiar diseases of such system. All are liable to inflammation, but the muscular system is provided with the peculiar function of contractility, which may be simply destroyed, as by the poison of lead, or greatly increased by employment and action, while the peculiar inherent qualities of the brain, perception and volition, may likewise be destroyed, diminished, or increased, and augmented beyond measure. The feeling transmitted by the sense of touch may be infinitely magnified or may not be perceived by the brain at all, and a series of hurried and irregular actions may be the result of the hasty manner in which volition is exercised.

Physicians, in treating mental diseases by blood-letting, were perhaps biassed by the observation of the peculiar structure of the veins of that organ, rendering stagnation of blood, consequent on any obstacle being presented to the return of the vital fluid to the right side of the heart, of frequent occurrence, and also from the prevalence of apoplexy, which has been more generally attributed to determinations of blood to that organ than to its true causes,—increased thickness of the left ventricle of the heart, and diminution of the elasticity of the smaller arteries of the brain by deposition of bone in their coats.

Experience has shewn that blood-letting in maniacal cases, unconnected with disease of other organs than the brain, is seldom attended with good effect, and of late years the soothing system has very generally been adopted by medical men, and founded as it is on true principles of pathology, is more likely to lead to success than any other. To diminish the increased and morbidly acute perceptions, and to effect a decrease in the sensibility of the organ, and to reduce the exaggeration of its natural functions, seems to be the great object; and so far from such a condition being always the result of too great a flow of blood to the head, morbidly stimulating the organ, it often occurs in those who have rather less blood than usual for the maintenance of life in the brain, occasioned by excessive evacuations, watching, anxiety, and bad living.

About three years ago I published some lectures on this subject, in which I spoke of the great advantage which had been derived at the large Lunatic Establishment on Bethnal Green, by the use of the preparations of morphia, under the care of Messrs. Beverley and Phillips, the superintendant and resident surgeon. Several cases have since occurred to me in private, in which the advantage of this practice has been so evident that I lay it before the Society, with the hope that in other hands it may be more extensively useful.

A lady, aged about forty-eight, was attacked in the month of August, 1833, (after exposure to severe

distress by the death of a relation who expired in her presence,) with mental derangement. Her usual habits of thinking were those of great deliberation; she had lived much in society, and from her station, mixed much with the world, nor had there at any time been any, even the slightest, indication of eccentricity or weakness of mind. Her mind was, at the time I saw her, filled with gloomy ideas; imaginary neglect of great and solemn duties, and a belief of having committed indescribable and even ill-defined crimes, constituted the principal features of her malady. Her bodily health was unusually robust, and she had scarcely ever suffered even from trifling bodily ailments. In the first instance the patient was bled, and took repeated doses of purgative medicine, but without any beneficial effect. The pulse was not weak; the nights were sleepless, and there was constant watchfulness present; there was no pain in the head, but a sense of weight was described, and there was restlessness of the body always present, so that the patient would often endeavour to jump out of bed and run about the room. During an unavoidable absence from London, the patient was seen by my friend Dr. Southey, and she was kept under nauseating doses of tartar emetic without any satisfactory result*.

It was now resolved to try the morphia, and a grain of the acetate was ordered to be taken every night, the bowels to be kept open by small doses of castor

* The patient was also twice seen, when in a state of progressive improvement, by Sir H. Halford.

oil; the severity of the symptoms became greatly diminished, and it occurred to me that the sedative effect of cold would greatly assist the operation of the remedy. Ice was therefore kept to the head in a bladder, day and night. The morphia never failed to procure a good night, and thus by degrees, without any other remedy, except those mentioned, the mind cleared up. The use of ice was gradually abandoned, but the morphia continued to be administered every night during three months, although all trace of insanity had disappeared six weeks from the commencement of the employment of the remedies, during ten days of which the ice was kept constantly to the head. No relapse whatever has occurred in this patient.

CASE II.

A married lady, æt. about 34, the mother of several children, was attacked in October, 1833, on her journey to London, with maniacal derangement. I saw her first at about fifty miles from London, and the history of the attack was very confused. She had over-exerted herself previous to leaving a distant part of the country, and at this time the catamenia were present. They were, as it was reported, suddenly checked. She had been ill some days; and there prevailed an idea in the minds of her medical attendants that there had been inflammation of the lungs. She had been purged, bled, and blistered; the blood did not shew the inflammatory coat, and notwithstanding the evacuations her mind continued estranged; the prevalent idea being fear of some ob-

ject near her, or of some serious accident having happened to those she most loved.

She was ordered half a grain of acetate of morphia immediately, to be repeated the same night. Great relief was experienced by sleep ; but the remedy was not repeated, and I was obliged to leave the patient, after seeing her once only.

About a fortnight from this time, the patient was removed to London and placed under my care. The mind was seriously affected, the patient was violent, and her imagination strangely disordered. She fancied her children were murdered, and their spirits returned to torment her, and that some similar evil menaced her husband. Her sleep was broken, and her conversation incoherent. The pulse was 100, and not strong. The tongue white, but not loaded ; there was no fever, but occasional flushing of the face. The catamenia had returned at the usual period. A grain of the acetate of morphia was ordered every night at bed-time, in the following draught :—

R Acet. morph. gr. j.

Acet. distillat m̄ vj.

Misce et adde

Aquæ cinnamomi.

Aquæ fontan. āā 3 vj.

Tinct. Card. comp. 3 j. Misce.

Ft. Haustus omni nocte sumend.

Ice was also directed to be applied in a bladder

to the head, and the bowels were kept open every alternate morning, with either castor oil, or as much sulphate of magnesia in infus. sennæ, as would produce two dejections.

In three weeks from this time, I had the satisfaction of seeing the patient begin to recover. Her restoration to sanity was very gradual, and she required quiet during several months, but no perverted imagination was perceived during this period. No other treatment was adopted, with one exception, which is worthy of observation, as showing the different effects of morphia and opium in the same constitution, and the same disease.

When the patient was advancing towards convalescence, she was anxious to take an opiate draught, which had formerly been prescribed for her after her confinements, and from which she had derived much comfort, instead of the draught containing the morphia, and she was indulged in her desire; but the effects were widely different, the night was restless, and she awoke in great alarm, her tongue was furred, her head ached. Her imaginary misfortunes and crimes returned, and it was not until she had repeated the morphia for several nights that she regained the state of comparative quiet which terminated in recovery*.

There has been no relapse in this case.

* In this case I had the pleasure, on one occasion, of meeting Mr. Stone.

CASE III.

I was desired in August last to see a lady under the following circumstances. She had borne a child about six months previously, at a time when she was in great affliction by the desertion of her husband and pecuniary distress. Her confinement was followed by mental derangement, and when I saw her she was in a state of imbecility, unconscious of all which passed around. Aroused occasionally by the importunities of those who watched her, she uttered a short quick cry and relapsed into her usual state. Her fæces and urine were passed all unconsciously. The skin was cold, the pulse feeble, she never seemed to feel pain, nor did her hand wander to her head as if any painful affection of the brain existed.

I ordered her the acetate of morphia in the dose of a grain every night, and half an ounce of castor oil every alternate morning. In a week a slight amelioration of symptoms occurred, and at the expiration of a month she was manifestly conscious of my presence, took food of her own accord, and had been seen to open a book, and appeared to peruse it during some short time.

The recovery was now gradually progressing : at the expiration of the month of September she could understand every thing said to her, she was quite conscious of the calls of nature, she wrote a coherent and sensible letter, was enabled to see her friends,

her child, and to converse on her own prospects. Her mind is now feeble, though not insane ; she works, reads, and plays on the pianoforte, but does not appear to be capable of any considerable bodily or mental exertion. She still continues to take the morphia, and has done so uninterruptedly during four months*.

I will not detain the Society by more examples of the utility of this medicine in diseases of the mind, although I have seen several of a more chronic form experience great relief from its employment.

It appears to have been of more use in what is termed melancholia, where the mind is tortured by imaginary want, ruin, or crime, than where the derangement partakes of more brilliant ideas, as of super-human knowledge, dexterity, or wisdom ; or in those cases in which one single idea occupies and absorbs the mental powers.

13, Charles Street, Berkeley Square.

Dec. 20th, 1834.

* Since this paper was read before the Society, I have learned that no trace exists in this case of the malady under which the patient laboured ; she resides in the country, and is in perfect health.

CASES AND OBSERVATIONS
ILLUSTRATIVE OF
DIAGNOSIS
WHEN ADHESIONS HAVE TAKEN PLACE IN
THE PERITONEUM,
WITH REMARKS
UPON
SOME OTHER MORBID CHANGES OF THAT MEMBRANE.
BY RICHARD BRIGHT, M.D., F.R.S.,
PHYSICIAN TO GUY'S HOSPITAL.

READ JANUARY 27TH, 1835.

THE cases which I am about to offer to the Society will be found to vary essentially from each other, and I am induced to throw them together only as they illustrate some points of diagnosis, and one, in particular, which appears to me of considerable importance in the investigation of abdominal disease, and which, as far as I know, has hitherto escaped observation.

When the peritoneum has become the seat of inflammation, whether of the common, the tubercular, or the malignant character, adhesions are occasionally contracted both between the viscera themselves and

between the viscera and the portion of the peritoneum lining the parietes; and it may be of importance to ascertain the existence of such unnatural adhesions, as guiding and modifying, not only our prognosis, but our practice. At all events, let the actual utility of such information be what it may, according to the present state of our knowledge, whatever symptoms facilitate our obtaining an exact insight into the progress of disease, must be satisfactory to the physician, and may hereafter prove beneficial beyond any thing we can at present foresee.

I shall then content myself with stating, as a sufficient preface to most of the cases contained in the following communication, that I have observed on several occasions, that when the circumstances of the disease had rendered it probable *that adhesions might take place between the viscera and the peritoneum of the abdomen, a very peculiar sensation has been communicated to the touch, varying between the crepitation, produced by emphysema and the sensation derived from bending new leather in the hand.* And in each of the cases which I shall now detail, I have had the opportunity of discovering, by examination after death, that such adhesions had existed in the parts where this sensation was discoverable; whereas in no case have I observed the phenomenon, and ascertained that the particular morbid condition did not exist; so that I am led to infer the probability that the same adhesive process had taken

place in those cases where no opportunity of post mortem examination was afforded.

I shall detail the cases nearly (and in the particular parts referring to the subject under consideration, verbally) as they were taken from day to day in my note-book, in order that it may be seen exactly in what terms I described the symptom, which is the immediate subject to which I would direct the attention of the Society.

CASE I.

William Winch, a sea-faring man, aged 42, was admitted under my care into Guy's Hospital, March 25th, 1829, having his abdomen much distended by ascites, and his legs greatly swollen with anasarca. According to his own account, he had been attacked thirteen months before with an inflammation of the liver, followed by effusion into the cavity of the abdomen;—this subsided under medicines, but the abdominal effusion returned about three months ago, and six weeks before his admission he was tapped, when seven quarts of bloody serum were drawn off, which produced but little diminution in his apparent size; the fluid gradually re-accumulated, and fluctuation became most distinct. Tongue clean. Pulse 100.

Purgative and diuretic remedies were prescribed,

but as the abdomen had become exceedingly unwieldy, I ordered the fluid to be removed by tapping, on the 1st of April, and four gallons two quarts of serum, highly tinged with bile, and coloured with blood, were drawn off. The abdomen filled again rapidly, and no unpleasant symptoms followed the operation, but on the night of the 19th, he was attacked with severe pain in the left side, for which he was cupped with relief.

In the beginning of May his bowels became greatly relaxed, accompanied with dysenteric symptoms; this was relieved by castor oil with laudanum, and by small doses of rhubarb and ipecacuanha, with suppositories of opium.

Early in June the urine had become very abundant, by the use of diuretics, but on the 19th of that month he was again attacked with most severe pain towards the right side of the abdomen, for which he was bled, and took three grains of calomel with one of opium every four hours. The inflammatory symptoms were quite relieved in two days, when the calomel and opium were administered at longer intervals.

June 26th. Since he was bled and has taken his present remedies, the quantity of urine has greatly increased, and he has lost at least three inches in the circumference of the abdomen. He generally passes nine pints of pale straw-coloured urine in twenty-

four hours, and he complains much of the weakness which it induces. The swelling, both of the legs and the abdomen, diminished rapidly. The abdomen acquired a singular pendent appearance and a solid feel.

July 8th. The abdomen, though greatly diminished and flaccid, is still projecting, and communicates to the feel the sensation of a semi-solid substance, without fluid, *and gives to the hand an impression as if two surfaces passed over each other, with adhesions between them*; it is a *kind of crepitus*. Though quite free from pain he evidently loses strength, and his face grows thin and sallow.

Diarrhœa and loss of appetite came on shortly after; and in spite of mild nourishment he sunk on the 30th of July.

Sectio Cadaveris. The body was much emaciated, the abdomen large, particularly in the central part, below the umbilicus. On laying open the parietes of the abdomen, not above one or two pints of serous fluid escaped. *On the lower part, and particularly below the umbilicus, and to the right side, strong adhesions had formed between the peritoneum of the parietes and a large tumour*; and on separating the attachments, which could scarcely be effected without laceration, it appeared that the tumour was a mass of fungoid substance, bearing in some parts a lobulated character, but everywhere

soft and spongy to the feel, attached to the stomach, and descending quite to the pelvis. It was slightly glued to the viscera by adhesions which were evidently of late formation, and were easily torn through. When the whole mass was raised, the intestines, both small and large, were found lying behind it, chiefly pressed into the upper part of the lumbar region, and under the margin of the ribs. On examining more carefully its connexions above, it was found firmly united to the right half of the large curvature of the stomach, and to the omentum, which lay as a fatty mass, not very unhealthy in appearance, over the upper part, and besides the tumour, was the only object which came into view when the abdomen was first opened. The stomach felt remarkably hard and solid over the whole of its pyloric half; and on opening it, a mass of lobulated projections was seen rising from the large curvature, filling up one half of its cavity. The mucous membrane covering this was in part healthy; but at the apex of each lobule might be seen a depression, as if ulceration were beginning to take place; and in one part, about the centre of the mass, an oval portion, larger than a shilling, was entirely abraded. The pylorus itself was perfectly free from disease.

The structure of the tumour was very peculiar. It was surrounded by an investing membrane, on which many large vessels were distributed; and in some parts it felt softer and more fluid than in others,

rising in these parts into semi-globular elevations. On cutting into it, the greater part was found to be composed of a fibrinous mass, not unlike the coagulum of blood ; in some parts more red, in others less so, and in a few parts membranous cysts of considerable strength were found containing bloody fluid. The whole tore easily as soon as the external membrane was divided.

The intestines were covered in every part with an adventitious membrane, which had contracted them, and had also drawn together and shortened the mesentery. The same was observable on some portions of the tumour, and the liver was covered with a similar deposit.

The liver was not small and contracted, but rather soft in its texture, with its lower margin rounded ; and its colour was quite unhealthy, pale with red points. The gall-bladder contained a small quantity of unhealthy bile ; the pancreas was healthy ; the spleen covered with a thin, irregular, cartilaginous coating. The kidneys pale and hard.

In this case, then, I first observed the peculiar *crepitating sensation* ; and as on dissection we discovered both cellular adhesion to the parietes, and a spongy tumour of somewhat unusual texture, I could not decide to which of these circumstances the peculiar feeling was to be ascribed.

CASE II.

Sophia Young, aged 30, was admitted under my care into Guy's Hospital, Feb. 24th, 1830, with a large swelling of the abdomen. She had borne five children, and since August the catamenia had not appeared till three weeks ago, when there was a slight appearance, and at the time of her admission she laboured under menorrhagia. The tumour occupied the whole abdomen, and was of a very irregular form. She stated that it had at first shewn itself at the lower part of the abdomen on the left side, but now the most prominent part was on the right side, not far from the head of the colon, where a hard round projection was both seen and felt. Several other round, hard masses might be plainly ascertained by the touch, one nearly in the situation of the liver, and another to the left of the umbilicus, and one below. There was besides, a distinct, general fluctuation, and in several parts, on making the parietes *move gently, a peculiar feel, like a slight crepitus, or like the crackling feel of new leather, was to be distinguished.*

I considered this to be either an ovarian tumour or a collection of hydatids, *and that the peculiar sensation communicated to the hand, arose from adhesions between the tumour and the parietes of the abdomen.* I thought it by far more probable that the tumour was ovarian, from the history, from the fluctuation, and from the hardness of some portions

of the tumour. As the tumour was large, and from its size exceedingly inconvenient, I spoke about tapping in her hearing, but found that she most resolutely refused to consent to an operation. My treatment therefore was confined to the application of leeches to relieve local pain, from which she suffered much, and the regulation of the bowels, together with a few other internal remedies which suggested themselves as likely to retard the increase of the morbid growth and effusion.

On the 7th of July she left the hospital, decidedly increased in size, but still retaining a tolerably healthy appearance in other respects.

When she had returned home, she continued to increase in bulk—her legs swelled, becoming œdematous and then inflamed. She gradually sunk, and died on the 31st of December, 1830.

Sectio Cadaveris. The upper parts of the body greatly emaciated : the legs œdematous, with desquamation of both shins. The abdomen was of the most inordinate size, and very irregular in its form ; numerous veins ran over the tumour, and were seen forming large plexuses on the chest.

The parietes of the abdomen were found to adhere very generally, but chiefly about the central part, from side to side, to the tumour within, and there was only about a quart of limpid, straw-coloured

serum in the cavity of the abdomen. When the integuments and the attenuated muscles had been pretty well detached from the contents of the abdomen, a tumour exactly resembling the external form of the abdomen was fully brought to view,—the only difference being that the projections on its surface were rather more marked. It was now quite obvious to the feel, that the whole was one large cyst with several hard, flattened bodies, almost like the placenta, formed in its parietes. The intestines were forced back out of view to the left side, and the liver was quite pushed under the ribs, so that nothing was to be seen but the large ovarian tumour. An opening being made into the cyst, nearly six gallons of a tenacious dingy coloured fluid, of the consistence of thick gruel or very thick linseed tea were drawn off, and the cyst being laid open, a tolerably healthy surface was exposed, with a few uneven parts where smaller cysts seemed to be pushing forwards into the cavity. The greater part of the thick, cake-like masses, which occupied at least two-thirds of the whole parietes of the tumour, were developed in the substance of the parietes, and projected outwards rather than inwards. Cutting into these masses, they afforded an appearance of cells filled with thick mucus, not unlike, in some parts, an enormous honeycomb filled with its contents, and in one part near the iliac region, a large rounded mass projected as an external appendage to the great tumour. On examination it appeared that this was a cluster of cysts, more or less

globular, which projected into a kind of chamber connected with the large cyst, the opening being formed by two or three crescentic margins, some parts of which were serrated with very fine spicula of bone. This mass of disease was attached entirely to the left broad ligament of the uterus; the ovary itself, however, could not be traced. The uterus and the right ovary were perfectly healthy, but the uterus was drawn round by the weight of the tumour, which, though it arose in the left side, lay very much to the right of the abdomen.

The viscera of the abdomen were in general healthy, as was the peritoneum of the intestines, which in no part adhered to the tumour, though the parietes adhered so generally. The liver was healthy. The kidneys were flaccid and pale.

The chest was diminished in size by the tumour, which rose almost to the third rib. The lungs were healthy in structure, but gorged with blood.

CASE III.

Mr. A. B., about sixty years of age, who had been much exposed in military service to the vicissitudes of climate, became, in May 1830, the subject of ascites, followed by anasarca of the lower extremities, and I was requested to see him by my friend Mr. Fernandez. The countenance at times a little

sallow, the urine rather high-coloured, and the stools pale. Tongue perfectly clean. Pulse always about 80, his general feelings almost as if free from disease.

On the 19th of June he was tapped by Mr. George Babington, and fifteen quarts of the clearest serum, slightly tinged with yellow, were drawn off. He bore the operation well, no bad consequences followed; the anasarca subsided, and in fourteen days half the quantity of serum was again drawn off by the trochar. In about a week a third, and in another week a fourth operation was performed, and each time from sixteen to twenty pints of serum came away. After the fourth operation we first perceived any unhealthy change to have taken place in the abdomen, for there was a distinct swelling of a soft and rather spongy character to be felt a little above the umbilicus, and after both this and the subsequent operations, he experienced a little more constitutional irritation than on previous occasions—still, however, he rose from his bed, and even went once or twice into the open air in a wheeled chair, and was again tapped on the 25th of July for the fifth time. He bore it well; but now a tumour was most distinctly to be felt, *uneven in its surface, spongy in feel, and giving a kind of crepitus upon pressure*, which led me to consider it in all probability a mass of soft adventitious matter produced from serum and fibrin, the result of adhesive inflammation: and it forcibly brought to my mind the case of Winch, as I stated

in my notes, but not having as yet examined a second case, (for the death of Sophia Young had not then occurred,) I was uncertain whether to ascribe it to adhesion or to the soft, fibrinous deposit. This peculiar sensation continued to be observed for some time, but the fluid again accumulated, though in less quantity, and was removed for the sixth and seventh times, by operation, on the 6th and 23d of August. From that date no fresh accumulation of serum took place, and the hard mass appeared gradually to contract and subside.

Early in October he was able to go daily to the city, where he had business, for several hours. He called on me to shew himself in the beginning of November, at which time his abdomen was rather prominent, giving a sensation to the touch as if a hardened mass occupied a large portion, particularly about the umbilical region.

In the middle of December a fresh accumulation of fluid appeared to be taking place, and the hard mass was less distinctly felt; his body was bent forward as he walked. I recommended some diuretic remedies, and on the 27th of the month I visited him at home, where he was now confined. The abdomen was evidently less than when I last saw him; it felt unevenly hard and soft, and I doubted the existence of any fluid; at the scrobiculus cordis it was hard and rather tender, and he complained of pain passing from that part to the back. He was decidedly

drawn forward both as he sat and as he walked, and he stated that when he laid down, particularly on his back, a cough was apt to be induced, which not unfrequently went on to the production of vomiting, so that for the last month he had generally vomited about four times every week. I now stated to his friends the probability that the omentum had become corrugated, and was gradually contracting and making pressure on the stomach, and that the peritoneum in general was greatly disorganized.

October, 1832. I met him accidentally in the street, and though still bent forward a good deal, he had been enabled to join the military service of Don Pedro at Oporto, whence he had just returned. After this time I frequently saw him in the streets, and observed him obviously losing strength and becoming more and more sallow; and I have since understood from his family that the sickness of his stomach recurred almost daily, and the act of vomiting was attended by most excruciating pain; and about every fortnight or three weeks he brought from his stomach considerable quantities of blood. His bowels almost always relaxed.

On Wednesday, November 19th, 1834, he was apparently in his usual state of health, and supped with his family. On Thursday morning he complained of feeling ill; on Friday morning became almost suddenly comatose; and died on Saturday night, without having at any time completely recovered his sensibility.

Sectio Cadaveris, Nov. 24, 1834. On attempting to raise the *parietes of the abdomen*, they were found completely adherent to the intestines by an organized cellular membrane ; so that in dissecting away the parietes the intestines were more than once perforated, and when the parietes were removed, the small intestines with their convolutions matted together bore some resemblance to a large brain covered with a thickened arachnoid and pia mater. This adhesion might be considered co-extensive with the peritoneum ; but in some parts, particularly between the liver and the right kidney, and between the stomach and pancreas, and about the lesser omentum, were some cavities, of the size of hens' eggs or larger, in which milky or whey-like fluid was pent up. The omentum was drawn up and involved in adhesions of the peritoneum, again adhering, together with the stomach, to the parietes. The liver was held back by adhesions within the cavity of the ribs and diaphragm, and the spleen was glued firmly in the situation it ordinarily occupies.

Almost all the organs and tissues, except the lining membrane of the stomach, were soft and lacerable. The liver was small, and as soft as a soft spleen, yet evidently granulated. The spleen also was soft, and the kidneys, which appeared (as far as could be judged in their present state) granular, were so soft as almost to lose their form by being taken from the body. The lining membrane of the stomach was rather thick and firm. In the small intestines were dark, bilious fæces.

The heart was flaccid, with slight valvular disease, particularly in the mitral valve: this was, however, so slight as probably not to have yielded any marked symptoms during life. Lungs healthy; but the right adherent to the pleura.

The skull remarkably thick and heavy. The dura mater thick, and two or three very large patches of bone in the falciform process. The arachnoid opaque, and spotted with milky patches. An unusual quantity of serum under the arachnoid, some of which had probably been long effused, as it had made deep impressions in the furrows of the convolutions. The arachnoid separated readily from the brain. The ventricles were slightly distended. There was no peculiar vascularity in the brain, and the external layer of the cineritious substance did not separate readily.

In this case then, as in the two preceding, one of the earliest intimations of the formation of adhesions was derived from the peculiar sensation communicated to the hand. I never remember to have seen the cavity of the abdomen so completely obliterated by simple healthy adhesions as in this case, and in all probability the patient owed the prolongation of life in part to this state of the peritoneum; at the same time, there is no doubt that the extensive adhesion was productive of other evils scarcely compatible with the long continuance of life.

CASE IV.

In April, 1832, I was requested to meet Dr. Pidduck and Dr. James Clark, in consultation in the case of a gentleman who after severe illness had become the subject of ascites, which had now existed in a very decided form about two months. I need not at present enter minutely into the circumstances of the case, it is sufficient to say that it was thought right to perform the operation of paracentesis, and above four gallons of clear, pale straw-coloured serum were drawn off by Mr. George Babington. The operation was repeated in a fortnight, when three gallons of a fluid rather more yellow than the last came away. Two days after the second operation, I noted that a *slight sensation of crepitation was distinctly felt over the situation corresponding to the liver and omentum*. This was perceived but for two or three days, and then became indistinct.

Ten days after, seven quarts of clear fluid were drawn off, and the abdomen, though all the fluid seemed to be taken away, was not diminished to its former size, and a distinct hardness was now felt about the situation of the left lobe of the liver, which was attributed to a corrugated state of the omentum. Nearly six weeks now elapsed before the operation was repeated, when one gallon of fluid, of a light colour, was evacuated.

After the fourth operation the accumulation never

returned to any marked extent, and he went into the country.

In June, 1834, I was again requested to see him. He had returned to habits of indulgence, of which we hoped he might have been cured, and was now evidently approaching his dissolution; and after lingering about two days he died.

On examination of the body, the following were the most marked appearances.

The whole abdomen covered with fat, at least two inches in some parts. About two pints of fluid in the cavity. *The colon and omentum were adherent in one mass to the parietes of the abdomen.* The liver was lying under the ribs, concealed at first by the mass of corrugated fat, omentum, and adhesive matter. When the liver was a little drawn down, a hard and almost cartilaginous coating, with which the right lobe was covered, separated from it. The small intestines were quite free from adhesion.

The liver was small, and a well marked specimen of what is called the hobnail liver. Gall bladder contracted, containing only half a drachm of mucus, and two gall-stones, of the size of a small marble, and two smaller, one of which completely blocked up the cystic duct. Kidneys healthy. Lining membrane of stomach and colon rather thickened.

In this case, likewise, the peculiar sensation served as an early indication of the adhesive process going on, and that sensation had been perceived at that part *only* where subsequent examination proved the adhesion to have existed.

The circumstances of this case suggest the idea, not only that the adhesive inflammation is opposed to the throwing out of serum in the part where the adhesion actually takes place, (which indeed is so far almost a self-evident proposition,) but that an approach to that form of inflammation may have the same effect in checking effusion without any actual adhesion forming ; for as soon as the adhesive process began to take place but partially in the abdomen, the tendency to effusion very manifestly diminished. If then any mode could be devised of exciting inflammatory action in the peritoneum short of producing adhesion, when the membrane is prone to an inordinate secretion, it is possible we might check this fatal source of exhaustion without incurring the incalculable evils which must arise from gluing the intestines to each other and to the parietes ; and should this ever be attempted, every indication which can lead us to estimate the progress of adhesive inflammation will be doubly valuable.

In the case now before us, it is to be observed that the peculiar sensation existed only for three or four days, and I have had reason to believe

in other analogous cases, that the crepitation has chiefly belonged, though by no means exclusively, to some early period of the formation of adhesion, probably before the contraction of the newly formed fibres has taken place. I have at this time under my care a woman, in whom I believe inflammatory effusion to have existed in the peritoneal cavity, followed by adhesion, ascertained by the crepitation over the whole of the right side, from the pelvis to the margin of the ribs; but having observed this in a most decided degree for a period of ten days or a fortnight, it has since ceased to be perceptible.*

In each then of the foregoing cases, the symptom to which I wish to direct particular attention has existed in a degree which, after the first observation, induced me to note the fact and to conjecture the cause on which it depended, and in each the adhesion was discovered after death.

There are, however, besides this, many symptoms, both general and local, which assist in detecting adhesion, but I will proceed to take a review of some

* Since writing the above, I have had an opportunity of pointing out to the pupils at Guy's Hospital this peculiar symptom of abdominal crepitation, and verifying the diagnosis by examination after death, in the case of a man whose peritoneum was covered with miliary tubercles, and in whom recent adhesion had taken place between the intestines and the parietes from the supervention of active peritonitis, which was allowed to run its course unchecked for several days.

August, 1835.

of the most remarkable morbid conditions of the peritoneum, which I have observed more particularly as connected with ascites; and thus take an opportunity of stating some of the marks by which they are occasionally to be inferred.

One of the most frequent morbid changes in the peritoneum is when the whole is covered with an equally distributed false membrane, which renders it, in its general appearance, opake, and is apt to contract the loose folds of the membrane and those by which the various viscera are suspended or attached, and likewise to form a kind of compressing ligature about all the viscera themselves; the result of which is, that the omentum gradually becomes shortened and corrugated, ultimately forming but a narrow band along the arch of the stomach and the colon,—the mesentery becomes shortened, and the intestines, by this means, drawn towards the spine,—the calibre of the intestines themselves becomes diminished, and they are most obviously shortened in their course,—the liver is drawn close to the diaphragm and the spleen to the stomach,—while the kidneys are fixed more firmly into the cavities formed by the muscles of the loins,—and all these viscera are compressed in a degree which often produces alteration in their shape, and decidedly interferes with the integrity of their respective functions.

This false membrane is polished, like the peritoneum, and at first sight gives the idea of a thicken-

ing and opacity of the membrane itself; but upon examination, it is found capable of being removed and stripped off in large flakes, leaving the surface of the peritoneum polished and entire.

This I should consider the product of a very low stage of chronic inflammation, and possibly the result of that constant irritation which is kept up by the presence of an unusual quantity of serum in the cavity. The only signs by which it is to be ascertained are, the general derangement of the various functions, and the circumstance, that on employing percussion while the abdomen is still full of fluid, the superior part, as the patient lies on the back, yields no hollow sound,—which is generally the case when the intestines are free to float upon the surface of the serum, but which, now that they are held back towards the spine, cannot be perceived.

This adventitious covering of the peritoneum has occasionally been found thickened to so great a degree as to obscure the sense of fluctuation, and convey the idea that the fluid was encysted, when in fact it has been in the peritoneum itself. I once had a case under my care, in which a female was tapped fourteen times without suffering any untoward symptoms, the fluid reaccumulating in general very slowly, and on one occasion remaining so long absent as to inspire the hope that a complete stop had been put to the effusion. When the fluid was drawn off, the general impression remained of a large empty cyst, and a hard ovarian tumour was distinctly felt rising from

the left side of the pelvis; but when, after a lapse of nearly three years, she died, the diseased ovary was indeed found, but it was clearly ascertained that the fluid had been drawn from the peritoneal cavity, and so thick was the false membrane deposited on that portion which lined the parietes, that it resembled in some parts a layer of cartilaginous matter.

I will, however, detail more particularly the appearances which presented themselves on dissection.

C A S E V.

The abdomen large and flaccid, communicating the sensation of fluctuation in a cyst but partially filled; a large, hard tumour was also to be felt, rising from the pelvis, rather to the left side.

When a longitudinal incision was made into the abdomen, about six or eight pints of reddish fluid escaped from the cavity. The intestines were rather small in diameter, and placed towards the upper part of the abdomen; and looked opake, from a general deposit of adventitious membrane. The stomach was large; and a white rounded mass, about the size of a large fist, occupied the place of the liver. The parietes of the abdomen were lined over the whole anterior part with a firm, cartilaginous substance, somewhat unequal in its thickness, but in some parts not less than the sixth or eighth of an inch. The same cartilaginous substance covered the tumour which came from the pelvis, and formed the external coating of the liver, which lay like a ball under the

margin of the ribs. The spleen was also partially covered with the same substance.

The liver was tolerably healthy in its internal structure. The gall-bladder was confined and contracted by the adventitious coating. The kidneys were healthy.

The pelvic tumour gave a very imperfect sensation of fluctuation; and was attached so firmly to the posterior surface of the uterus, as to be completely inclosed in one membrane with it, as if it were either growing beneath the peritoneum, or as if both were enveloped in the same adventitious layer. The substance of the uterus was not in any way diseased.

When an incision was made into the tumour, it was found to be full of small rounded bodies, of the size of peas, or much smaller, looking like a large cauliflower. These small bodies were attached to the internal parietes of the tumour by vessels, and hung in bunches like grapes, affording an illustration of a morbid growth taking place in the manner described by Dr. Hodgkin in a late volume of our Transactions. The ovaries were not found, and seemed to be enveloped in this morbid growth, which formed altogether a mass of the size of a middle-sized melon. This mass was attached to the sacrum in such a manner that it appeared to make pressure on the nerves, more particularly on the left side. Although this structure of the tumour seemed in some degree to account for the paraplegia which

had long existed in this case, yet the brain and the spinal cord were most carefully examined.

In the brain there were strong marks of congestion. The cineritious substance was decidedly gray, and the medullary portion dusky, with bloody points; but no deviation from natural structure, except that on the upper part of the pineal gland, a small body of gritty matter was observed. The spinal cord was considered small, but was otherwise healthy.

The lungs exhibited a very slight appearance of inflammatory infiltration on the right side. The heart was small, but had upon it some fat, particularly towards its apex.

In this case I always considered it probable that the fluid, which had been drawn off fourteen times, was contained within a cyst. And as a diseased mass, feeling like a hard ovarian tumour, was constantly felt rather to the left side when the fluid was withdrawn, I supposed it most probable that the whole was ovarian. My reasons for thinking it encysted were, the peculiar absence of all constitutional symptoms, the very slight inconvenience which attended and followed the operation of paracentesis; the colour of the fluid, always tinged with blood, and depositing a considerable quantity of red particles, sometimes like vermilion, sometimes of a more dingy colour; and the sensation communicated to the hand when the abdomen was emptied of its fluid, for it did not become wrinkled and corrugated, but

simply flaccid and pendent, apparently not contracting, but the parietes presenting a thick, hard feel on pressure.

On the contrary, there were always many incongruities which led me to expect some great peculiarity in the cyst. The general consistence of the fluid never altered in the least, from the first operation to the last. It was never ropy, and the tinge of blood was only such as I had occasionally seen in ascites. There was never any change in the feel of the supposed external cyst; there was no growth of nodules on its surface or in its parietes, and the internal cyst scarcely increased in size from its first being felt. The long period of apparent quiescence in the accumulation of fluid, was unlike any compound ovarian cyst I had ever seen. The erect or half-sitting posture was always preferred, as if the fluid became more inconvenient when the patient lay down. The fluid occupied an unusual extent in the abdomen, extending in some degree to the hypochondriac and lumbar regions.

From all these circumstances I was led to think that there was one very large cyst of a simple nature, and that perhaps the pelvic tumour might be some independent growth, which I sometimes spoke of to the pupils, as being possibly of the nature of an extra-uterine foetation, or a mass of fat, and hair, and bone.

But to return to the actual state of the peritoneum.

The deposit of adventitious matter, though frequently universally and equally distributed, as in the preceding case, is found in other cases to assume some diversity of appearance, and more particularly on the convex surfaces of the spleen and liver it is remarkable for its honeycombed arrangement; a circumstance not improbably depending upon the interruption which is received during its deposit, by the sliding of their surfaces over the neighbouring surfaces of the diaphragm or ribs, and the interrupted effort at forming adhesions to their adjacent parts.

Many of the appearances which present themselves on the peritoneum seem to depend upon alterations taking place in this adventitious membrane, the feeble organization of which probably renders it liable to morbid changes and the development of morbid growths. Amongst these appearances is that of a carbonaceous deposit, more or less extensive, and varying in the intensity of its colour, and which I conceive to be the result of extravasation of blood into the newly formed tissue, under some peculiar circumstances as yet not sufficiently understood;—I say, under circumstances not sufficiently understood, because we do not know even whether it be the peculiar nature of the blood, or the peculiar structure of the part into which it is effused, which (supposing it to arise from effused blood at all) gives the liability to this black or gray appearance, to which I am perhaps premature even in ascribing a carbonaceous character. This black deposit has in its appearance

a striking resemblance to the black, pulmonary matter formed in the tissue of the lungs; and it seems to be of the same nature as that which forms the minute speckling of gray on the internal surface of the intestines, when they have been subject to continued chronic irritation. I have likewise seen it on the membranes of the brain, in cases where death having occurred from recent effusion of blood, rendered it probable that the black appearance was the result of similar extravasation at a former period.

This gray matter is variously distributed on the peritoneum. I have seen it in patches about the lower part of that which lines the parietes, and in other parts of that portion of the membrane; I have also seen it in the pelvis, and frequently on the surface of the intestines themselves; and I shall now relate a case which has lately occurred to me, which seems to shew its connexion with an hæmorrhagic tendency most probably taking place in the newly formed vessels of the adventitious membrane.

CASE VI.

John Wright was admitted under my care, May 7th, 1834. He was a tall, pallid, bloated man, aged 45, and said to have been very intemperate in his habits. During the last eight weeks his present ailments had attracted attention. He was the subject of anasarca, his legs measuring eighteen inches in circumference below the knee. Urine of a pale, dingy,

brown colour, coagulable, and of the specific gravity of 1007 : his abdomen was somewhat enlarged, with an obscure sense of fluctuation. I considered this a case of renal anasarca, and treated it as such ; his progress was very slow, as is usual in such cases ; and on the 11th of August I reported that the swelling had entirely left the legs, and he was walking about, but his abdomen was tense and round, though not very large. He walked bending a little forward, evidently from uneasiness in the abdomen, which was always tender and sometimes painful ; and his face, which was quite pallid, bespoke the anxiety of visceral disease. He was eager for purgatives, which seemed to give him temporary relief.

Shortly after this he was seized with attacks of an epileptic character ; and in one of them he died on the 9th of November.

Sectio Cadaveris.—On opening the abdomen, the whole was filled with a dark-red serum, evidently tinged with blood : the peritoneum, both of the intestines and the parietes, was covered with a thin adventitious membrane. The small intestines formed a mass, adhering together in the centre of the abdomen. The intestines were of a very dark gray colour, with masses of blood upon them. They were all rather contracted, and in some parts mottled with gray, carbonaceous deposit, like sausages. In the pelvis a good deal of loose coagulum, or collection of red particles, had deposited itself ; but the most curious

appearance was upon the peritoneum lining the parietes, on which clots of blood, bearing a botryoidal form and of a dark colour, were attached, and seemed to be held in this singular situation by the layer and meshes of a false membrane of a gelatinous consistence. The mucous membrane of the intestines throughout was gray, with numerous very fine, dark points. The stomach had an hour-glass contraction, but not permanent: the mucous membrane covered with a very thick tenacious mucus, and in itself rough. The liver covered with that honey-comb or worm-eaten appearance which is produced by an irregular deposit of false membrane. The liver itself by no means unhealthy. Spleen soft. Pancreas healthy. Kidneys small, flattened, of very pale colour, and semi-cartilaginous consistence; the cortical portion contracted; the surface granulated; the internal section shewed one uniform pale appearance. Brain,—some fluid effused under the arachnoid, and also into the ventricles. The superficial stratum of the cineritious substance was readily detached from that below it.

In this case we see very strongly illustrated the tendency to internal hæmorrhage which occasionally exists in cases of ascites, and which, as I have said before, seems in many cases connected with the structure of the new-formed membrane. It often happens that where the fluid drawn in ascites has, during several operations, been quite free from blood, the succeeding operations are attended by the dis-

charge of highly tinged serum, of which I have very lately had a case in a man labouring under ascites with enlarged spleen, in whom the fourth or fifth operation yielded a fluid, which deposited a large coagulum of perfect blood. In the case of Chant, (Case V.,) the red particles were deposited like powdered vermilion. In the case of Winch, (Case I.,) much blood was mingled with the fluid ; and in that of Wright, (Case VI.,) now more particularly the subject of observation, blood had been effused into the false membrane, without any operation having been performed.

The state of serum produced by the admixture of blood, and likewise the occasional deep tinge of bile, are by far the most frequent, if not the only peculiarities of appearance, which the serum of the peritoneum acquires in genuine ascites, even where it is connected with much disease of a malignant character ; so that, when in doubtful cases of ovarian dropsy, (cases rendered doubtful by the extent of the cyst, by the general fluctuation, and by the absence, at least during the distended state, of any perceptible secondary tumours,) we find the fluid assuming either the opaque appearance of puriform matter, or a ropy consistence, or the grumous appearance of long deposited and altered blood, we may, I think, generally conclude, in the absence of other proofs, that the fluid is not secreted by the peritoneum. There is likewise another state of the effused fluid, where it contains fine crystals of cholesterine, such as is de-

scribed by Dr. Bostock in some of the early volumes of the Transactions of this Society, which I have never observed in genuine ascites. It appears to take place generally when the fluid has been long collected in cavities, under different circumstances of disease, and amongst these the ovarian cyst may not unfrequently be ranked. Within the last week, Mr. Bransby Cooper drew off the fluid for me in a case where the fluctuation, extending even to the lumbar spaces, and the perfectly even shape and feel of the tumour, might easily have led to doubt, if not mistake, but the fluid was most remarkably loaded with the cholesterine, and I have no doubt of its encysted origin.

When the inflammatory action has gone to an extent to which it has apparently never reached when the adventitious covering only of the peritoneum has been formed, we find adhesions of greater or less extent taking place between the different organs, and between them and the parietes of the abdomen: and it is to this subject that I have so particularly referred in many of the foregoing observations.

When adhesions of this kind take place only to a small extent, they are not to be discovered, unless they happen to interfere with some function, and then only become the subjects of conjecture. I have seen habitual constipation apparently depend upon a firm old adhesion of small extent between the ileum and the peritoneum, at the brim of the pelvis. The

same effect has been produced by bands of adhesion stretching from the omentum; and such bands have been the cause of fatal constipation and strangulation of the intestines. When the adhesion has taken place about the stomach, that organ has been much affected, and frequent vomiting has been the result. But when the adhesion has been more general between the viscera, or the convolutions of the intestines, a peculiar feeling of hardness is communicated to the touch, over a greater or less extent, which awakens in the experienced physician strong suspicion of the fact; and when this has become universal, matting the intestines into one mass, the hard, unyielding feel which is discovered, or the dough-like sensation which is felt, or the unnatural, rounded mass which fills the place of the small intestines, present almost convincing proof of the condition of the peritoneum. Should there be, in addition to this, a want of that sensation of the viscera slipping from beneath the touch which is recognized in the healthy state of these parts, the probability is, that whether the viscera adhere amongst themselves or not, they are likewise glued to the parietes; and if still further, or if without the other symptoms, that peculiar *crepitus* of which I have spoken should exist, scarcely a doubt would be left in my mind that adhesions had formed.

The mode in which adhesion takes place varies very greatly with the severity of the inflammation, and with the constitutional peculiarity of the patient. In some of the cases which I have recited above, the

adhesion was of the more simple healthy character, formed by fine bands and meshes resembling cellular membrane, and this is probably the only form of adhesion which yields the sensation of crepitus; but it often happens that previously to the deposit of less healthy structures, this cellular union takes place, and becomes the nidus of morbid growth. For nothing is more common than to see an extensive sprinkling of miliary tubercles developed in these new structures, or massive deposits of scrofulous matter collecting between the convolutions of the matted intestines; or in cases where malignant disease exists, we find the true scirrhus, fungoid, or malignant tubercle occupying the adventitious structures: and often, when the intestines appear covered with these morbid bodies, we may strip from the peritoneum large flakes of false membrane, bringing with it the tubercles, and leaving the peritoneum perfect.

When these changes take place in the texture of the false membrane, they are apt to induce a still greater degree of hardness and of solidity in the diseased portions of the abdomen, and when they go to a great extent, present a board-like resistance to the hand, which no relaxation of the abdominal muscles can remove; and which becomes still more remarkable if the viscera are glued to the parietes, in which case we may often, as the patient becomes emaciated, discover by the feel something of the nature of the cementing deposit.

It is indeed often totally impossible to determine, from local symptoms, whether this deposit be scrofulous and tubercular or malignant in character. Yet it sometimes happens, more particularly when, by tapping, any inflammatory action has been induced in the cellular membrane of the integuments, that they assume a character at the part where the adhesion takes place, which is by no means equivocal; and in illustration of this point, I may hereafter offer some cases, shewing that occasionally, where the internal disease has been of a malignant character, the neighbouring parietes have indicated the fact by pretty speedily becoming the seat of true scirrhus tubercles, felt like small beans or peas under the hand, and quite superficially, as I have likewise more than once had occasion to observe, on the parietes of the thorax, where malignant adhesion has taken place between the lung and the pleura costalis. When the deposit is of a tubercular character, we frequently have a granulated feel communicated to the spread hand applied over the abdomen, and we generally discover other symptoms of the tubercular diathesis by which our suspicions are awakened.

Since the foregoing remarks were submitted to the Society, I have had under my observation, with Dr. Farre and Mr. Edenborough, a very interesting case, which, though it was impossible to overcome the feelings of the relatives so as to obtain a post mortem examination, was accompanied with such decided symptoms

that I have little hesitation in declaring very extensive peritoneal adhesions to have taken place.

CASE VII.

A gentleman, past the meridian of life, who had suffered several attacks of abdominal derangement, and in all probability chronic inflammation of the liver, became, in the month of February, 1835, much more seriously indisposed, his countenance sallow, and his abdomen distended with fluid.

When I first saw him, April 17th, the propriety of paracentesis was very naturally one subject of discussion, but we all felt convinced that such an operation would but hasten the almost necessarily and apparently fast approaching fatal result, and we contented ourselves with continuing such remedies as were calculated to act on the kidneys and support his declining powers. Under this treatment the abdomen began obviously to diminish, and the fluctuation to become less and less distinct. A solid substance projected a little at the umbilicus, and we could pretty plainly trace the thickened omentum, forming a resisting mass above.

On the 4th of May, the size of the abdomen having gradually diminished, I first distinctly felt a peculiar sensation, which I could compare to nothing so well as to that which is experienced *when the finger or*

hand is rubbed over a damp pane of glass, or other damp polished surface; it was obtained by placing the hand firmly on one side of the abdomen, while the mass of intestines was made to move by gently pressing the other hand on the opposite side. This sensation appeared to me to be derived from the passing of the two peritoneal surfaces over each other, and I stated that I thought it probable the process of adhesion was taking place.

May 7th. The abdomen is less, and the whole surface, under gentle pressure with the hand, now shews small corrugations. On deeper pressure a crepitus is plainly felt in various parts, which, together with the resistance and doughy feel communicated to the touch, convinces me that adhesions are taking place pretty generally between the omentum and other viscera and the parietes.

18th. The abdomen diminishes, and the crepitus, which, probably owing to the softness of the recent adhesion, resembles deep seated emphysema rather than the crackling of leather, is very general, but most remarkable at the right side of the abdomen. I pointed it out to Mr. Edenborough, who then and at other times distinctly recognized the peculiarity of the sensation.

21st. The diminution of the abdomen still goes on. The omentum is plainly felt attached to the um-

bilicus, while a hard mass below the scrobiculus cordis corresponds with the left lobe of the liver. The soft crepitus is very perceptible over the lateral portion of the abdomen on both sides, but not below the umbilicus, where there is still a little fluctuation. In addition to his other distressing symptoms, he has now for the first time experienced occasional sickness.

28th. The sickness has been more frequent after taking food, and is almost always brought on by rising in bed after eating. The abdomen continues to diminish, the countenance is improved, and the dejections are natural. Urine pretty copious. Tongue red, but moist : it is with great difficulty we can induce him to take any nourishment. As far as I can discover the state of the abdomen, it is probable that the omentum is adhering over the whole upper part, and the stomach, colon, and neighbouring viscera are matted together, but the lower part of the abdomen is as yet free from adhesions.

June 1st. He is now sick as soon as he rises to take any food, so that while the nutriment he gets down is exceedingly little, that which he retains is still less. He has been observed to wander a good deal in his mind. Urine pretty abundant. The state of the bowels has varied ; for twelve hours he has had a sharp diarrhoea, but that has subsided. I now distinctly feel the soft crepitus below the umbilicus : I likewise feel a portion of the right lobe of the liver

hard, and not adherent to the parietes below the false ribs in the right lumbar space.

June 4th. The yellowness of the skin amounts to slight jaundice. Urine very high coloured. Stools tinged with bile.

He became gradually weaker, and died on the 12th of June.

It is greatly to be regretted that in this important case a post mortem examination could by no means be obtained; but I have scarcely any hesitation in pronouncing what was the condition of the peritoneum. The particular symptom on which so much stress is laid in the foregoing observations, may at least be received in confirmation of the conclusion to which the general increasing hardness of the abdomen, the disordered condition of the bowels, and the gradually generated tendency to sickness on assuming an erect position, particularly when food had been introduced into the stomach, seemed to point; nor does the fact of paracentesis not having been performed, as it had been previously to the adhesion of the peritoneum in three of the preceding cases of ascites, in any way militate against the probability that adhesions had taken place, for every one conversant with such subjects must have seen this condition of the peritoneum in cases where the fluid had never been drawn off; and indeed it was so in two

of the instances already related ; but if a fact of this kind were wanting, it would be found in the following note which was very kindly written to me by Mr. Copland Hutchison, and affords an interesting corroboration of the accuracy of the diagnostic symptom which I have endeavoured to establish, while it presents a case in very many respects strictly analogous to that which I have just introduced ; and Mr. Hutchison has since told me, that the patient had never been tapped ; and the sensation communicated to his touch was so completely that of deep-seated emphysema, that he concluded at the time that some process of disorganization was going on in the viscera, by which gas had been evolved.

Duchess Street, Portland Place,
Tuesday, 16th Feb., 1835.

DEAR SIR,

I HAVE this day seen in last Saturday's Medical Gazette, a short notice of a paper of yours read at one of the recent meetings of the Royal Medical and Chirurgical Society, on the subject of a new diagnosis in adhesions between the peritoneum lining the abdominal parietes, and the peritoneal covering of the liver,—the result of inflammatory action.

It is singular that, only yesterday, I examined the body of one of Mr. Weiss's shopmen, in Long Acre, who had laboured under ascites for many months, with great visceral disease. About six weeks ago,

when I first saw him, I distinctly felt the crepitus you speak of, and remarked it to Mr. Wade, Jun., of the Westminster General Dispensary, and others, immediately under the natural situation of the margin of the right lobe of the liver, and occupying a space of the size of my extended hand, towards the right side.

The post mortem examination not only exhibited adhesions of the peritoneal lining of the parietes of the abdomen and diaphragm to the liver and omentum, which latter was, in one part, of a scirrhus hardness, but also to the arch of the colon and small intestines, which were likewise adherent to each other. The spleen, mesenteric glands, and pancreas, were very much enlarged,—the glands being of a scirrhus texture ; there were, besides, a considerable stricture and scirrhus thickening of the left descending colon, immediately above the sigmoid flexure. The head and thorax were not examined.

Whilst fresh in my mind, I have thought it but friendly to furnish you with this additional fact to those you have had read at the Society, and

I am, dear Sir,

Yours, very faithfully,

A. COPLAND HUTCHISON.

ON
THE MEDICINAL PROPERTIES
OF
CREOSOTE.

By JOHN ELLIOTSON, M.D., F.R.S.,
PRESIDENT OF THE SOCIETY.

READ 24TH FEBRUARY, 1835,
At the Opening of the Society's Apartments in Berners Street.

IN my work upon the diseases of the heart *, I began by stating that I conceived practical medicine was to be perfected by improvements in our knowledge of the nature of diseases, obtained through the cultivation of anatomy and physiology, and of morbid anatomy and morbid physiology ; by improvements in diagnosis ; and by improvements in our acquaintance with remedies and their application. With respect to the third mode, I expressed my belief that “ much remains to be accomplished in the discovery both of the virtues of medicines already in use, and of new medicines or such modifications of old ones as almost entitle them to the epithet new. Every advance in our knowledge of the essential nature of disease will no doubt enable us to improve our application of

* On the Recent Improvements in the Art of distinguishing the various Diseases of the Heart. Folio, with copper-plates. 1830.

remedies upon general principles, and to improve our general indications. But, without any additional knowledge of the nature of diseases, cautious trial, guided by the best analogy we may discern, or by some fortuitous occurrence, will enable us, if we are disposed to labour, to effect much in extending our knowledge of the powers of particular remedies over particular diseases. Lord Bacon regrets that physicians apply themselves so exclusively to general indications, neglecting the peculiar properties of remedies in particular diseases. ‘*Medici, hujusce ætatis,*’ he says, ‘*licet generales intentiones curationum non male persequantur, particulares tamen medicinas quæ ad curationes morborum singulorum proprietate quadam spectant, aut non bene norunt, aut non religiose observant.*’ He remarks that they merely go on in their prescriptions, ‘*addendo, et demendo, et mutando, circa medicinas, pro ut iis libitum fuerit, et fere pharmacopæorum more, quid pro quo substituendo*’; and he advises that some physicians ‘*et eruditione et practica insignes, opus aliquod conficiant de medicinis probatis et experimentalibus ad morbos particulares.*’” *

On every occasion that I have laid the results of my enquiries into the properties of medicines formally before the public, (and with one exception it has always been by means of this Society,) I have carefully detailed the circumstances by which I was led,

* Instauratio Magna. First Part.

—sometimes information supplied by others, sometimes an accidental fact, and sometimes a fancied analogy. This I shall do at present.

In the early part of last year, I found that M. Reichenbach had discovered a new principle in pyro-ligneous acid and all the tars, called Creosote by him from its property of preserving animal matter, and said to cure a variety of diseases. Having learnt the doses in which it was administered, I commenced a trial with it, in the beginning of July, at St. Thomas's Hospital, in cases of two diseases, which, being among the chief opprobria medicorum, justify any new attempt at cure that is not dangerous or absurd. The diseases I selected were phthisis and epilepsy. The medicine proved stimulating; and, if the first dose exceeded two or three drops, nausea, vomiting, vertigo, headache, and heat of the head, were generally the consequence: although, if the dose was at first only one or two drops, many patients bore a gradual increase of it to six, and some to ten, twenty, or even more, without unpleasant effect. As is observed with all powerful remedies, a very minute dose only can be borne by some persons. I have known individuals not bear more than a fraction of a drop of Scheele's prussic acid or of Whitlaw's tincture of lobelia inflata, or the fraction of a grain of the hydriodate of potass. Accordingly, I have known some patients not bear more than a fraction of a drop of Creosote. On the other hand, as a few persons will bear and even require a gradual aug-

mentation of the dose of Scheele's prussic acid to fʒss, —of Whitlaw's tincture of lobelia inflata, to upwards of fʒss, and of hydriodate of potass to upwards of ʒss, —so I knew a lady steadily augment her dose of Creosote to forty drops, before it disagreed: the addition of a single drop beyond this produced extreme giddiness, insensibility, and vomiting, followed by headache for several days. I found it much more likely to disagree if not well diluted; though, the longer it is given, the less dilution frequently is necessary. At first, every drop usually requires about half an ounce of water; and few persons can take many drops in much less than half a pint, without experiencing at least considerable heat, in the tongue especially, and in the pharynx, œsophagus, and stomach. I have always suspended it in the water by first mixing it with a little mucilage. My trials with it internally in phthisis were perfectly unsuccessful. I have since made many phthysical patients breathe for four or five minutes, four or five times a day, through a mixture of it with mucilage and water, but with no further effect in general than occasionally an increased facility of respiration, and a diminution of the cough and expectoration. I put one drop into rather less than a pint of cold water, and add one drop every time it is employed, in order to maintain the strength of the liquid, till this appears growing too strong; and then the patients inhale without adding any, till the liquid appears growing weak again. Some it always appears to irritate, and all in whom any degree of inflammation exists. I

am satisfied that it is no remedy for tubercles. Where, however, only a single ulcer, or but a small number, exist in the lungs, and there is no disposition to farther tubercular formation, it is very beneficial. One young gentleman, with a large solitary cavity in his left lung, has completely recovered, and not the slightest morbid condition is discoverable by the ear. In bronchorrhœa, or that state of the bronchial mucous membrane which consists in a profuse secretion without inflammation, I have seen its inhalation of essential service. In one instance of this affection, in which the expectoration was extremely offensive, the cure was very rapid. In asthma, also, dependent upon morbid excitability of the bronchial membrane, its inhalation is often useful. Even where it agrees perfectly well, the inhalation frequently induces a heat of the tip of the tongue.

The other disease which I had selected originally for a trial of the remedy, appeared in some instances a little under its control; a few epileptic patients for a time had milder fits, and at longer intervals. But, except in one or two instances, the disease returned with its former severity, or was uninfluenced altogether; occasionally, I think I saw it aggravated. All this was to be expected when we consider the infinite variety of the causes of epilepsy and the irremediable nature of many. The tranquillizing effect, however, of Creosote in some instances of this nervous disease, encouraged me to exhibit it in neu-

ralgia, hysteria, and that general morbid excitability which is sometimes denominated extreme nervousness.

The first case of neuralgia, or what appeared so, occurred in a girl, 12 years of age, who, after the influenza a year previously, had gradually become so costive, as to have an evacuation but once in three or four days, and then with great pain. In this condition she was suddenly seized with spasms in the abdomen, twitchings in the legs and arms, and extreme agony in the lowest part of the abdomen and pelvis. An attack of this kind frequently recurred, and at length came on every morning about 7 or 8 o'clock and lasted till night, when she fell into a comatose state till towards morning. The pain was such that she constantly sat moving backwards and forwards, wringing her hands, or pressing the lowest part of her abdomen; her face was expressive of intense suffering, and she was much reduced. At the time of her admission into the hospital she had made water but once in twenty-four hours for the last three months, the abdomen was very tense, though but little swollen, and gave a hollow sound on percussion. The urine and alvine discharge were of a healthy character, and the bladder on sounding gave no indication of disease. Every known medicine likely to prove beneficial had been exhibited in the country. She was one of the most distressing objects I ever beheld, and I utterly despaired of any improvement. Three grains of muriate of morphia every morning perhaps alleviated her sufferings; but

so little, that I discontinued it. On the 22nd of July, I ordered a drop of Creosote to be taken three times a-day, and the dose was gradually increased to seven. She began to improve rapidly, and left the hospital perfectly well in a month from the commencement of its use ; and in the mean time she had regained her flesh and every appearance of perfect health.

The next case was one of neuralgia of the posterior dental and nasal twigs of the superior maxillary nerve ; the pain was of that dreadful kind which we so often witness, causing great contortions of the countenance, and had existed three months. The man had been affected in a similar way three years previously, and had recovered without medical aid. He began the use of the Creosote in doses of three minims three times a day on the 22d of August ; on the 28th he was taking doses of six minims, and for the first time was better. The attacks, which had hitherto come on every five or six minutes during the day, and seriously interrupted his sleep, had become less frequent, and he had slept the previous night more than he had done for two months. He steadily improved, the Creosote having been slowly increased to eighteen minims, and on the 28th of August he was so well and happy that he would have left the hospital but for a slight cough. He had no relapse during his stay.

I have had two other cases of this severe form of neuralgia, occurring in the thumb or finger, in

which the remedy, after an exhibition of many weeks, had nearly subdued the complaint at the time I last heard from the patients. The medicine appears therefore to be one of those which are remedies in neuralgia. But, like them all, it will frequently fail, and I have frequently known it fail; for neuralgia, like epilepsy and paralysis, depends upon many causes, and these must require various modes of treatment, and be in their nature sometimes uncontrollable. In rheumatic neuralgia, not inflammatory, I imagine it is, that Creosote is the most successful. In that morbid tenderness of the surface of the body which appears so nearly allied to neuralgia, and which so often occurs in females, I have not seen it of any use. In common hysteria, unconnected with inflammatory condition of any part, I have often seen it considerably lessen the disease; the more rare and strange forms of hysteria have yielded to it; and the morbid excitability of those who are called nervous persons, I have frequently seen abated by it in a remarkable manner. In the latter description of persons, however, it is better to begin with no more than half a drop, as occasionally more at first produces excitement of the head. Palpitation, depending upon mere morbid excitability of the heart, has yielded to it far more than to other remedies.

While I was trying Creosote in phthisis and epilepsy, Asiatic cholera* became epidemic in London; and, not

* The disease appears to have obtained this absurd name from the sudden appearance of vomiting, purging, and spasms in it,

being satisfied with any mode of treating that disease, I requested that, if any of my patients at St. Thomas's were seized with it, Creosote might be given them. Two cases occurred, and Creosote was given with the effect of immediately arresting the vomiting; but the patients died. The fact, however, of the vomiting being subdued, led me to ascertain whether

just as in true *cholera*; the totally different nature of the matter discharged, and the various peculiarities which show it to be a specific disease and not a merely inordinate natural secretion, being overlooked. But as it entirely suppresses the bile, and also is a specific affection, we surely should no longer call it *bile-flow*, and should give it a distinct appellation. Even the term leucorrhœa would be far more appropriate than cholera, which signifies the very opposite to fact; but this term is already engaged. *Acholia* (*nulla bilis*) is a good Greek word, and harmonizes with a characteristic fact. *Asiatic acholia* might be thought still more designative.

Perhaps I may be allowed this opportunity for expressing my regret that, without some resolution, the absurd name—*apoplexy of the lung*, and, as I fancy, the illegitimate name—*pneumo-thorax*, will be established.

The lungs can no more be affected with apoplexy than with dyspepsia. Apoplexy is a loss of all sense and voluntary motion,—a suspension of the functions of the brain. This may arise from debility, poisons, pressure by bone, serum, or blood, &c. But, because, in fatal cases of the disease, we sometimes find that congestion and effusion of blood have been the source of the *symptoms* called apoplexy, circumscribed congestions and effusions of blood in the lungs have been strangely termed apoplexy. The condition appears in all respects so exactly what we call ecchymosis, if near the surface of the body or in membranes, that, rather than coin a new name, I would term it ecchymosis of the lungs.

Instead of pneumo-thorax, we should, I conceive, say pneumato-

Creosote was a remedy or not for vomiting. An abundance of opportunities soon presented themselves, and its extraordinary power of arresting vomiting, when not dependent upon inflammation or structural disease of the organ, I consider perfectly established. When inflammation of the organ exists, the stimulant power of the medicine must do harm, and more than

thorax. Because substantives, not derived from, but *composed* of, a *substantive* prefixed to another *existing noun*, there being no action between the things, or government or agreement between the words, are always made from the dative of the first (its final letter or diphthong being usually changed to *o*, if there is another vowel) prefixed to the nominative of the second noun. Thus we say, varico-cele, sarco-cele, hepato-cystic, gastro-enteritis, hæmato-cele, and, what must strike forcibly, pneumat-omphalos, and actually pneumato-cele: because the genitive of varix is varicis, of σὰρξ σαρκός, of hepar hepatitis, of γαστήρ γαστρός, of αἷμα αἵματος, of πνεῦμα πνευμάτος, and the dative is correspondent. We say also, cerebro-spinal, æri-form, and hydero- contracted to hydro-thorax, &c. from ὕδωρ, dropsy. Even where there is action or government between the two, this rule is often followed; as in pectori-loquy, utero-gestation. If hæmorrhagia is adduced as an exception, I reply that it is not composed of two existing substantives, because there is no such substantive as ragia, but that it is *derived* from the verb αἰμορῶν γέω. Βούγλωσσον, the herb bugloss, is no exception, for there is no such substantive as γλωσσον. It is *derived* from βοῦς and γλῶσσα. If it is contended that hydro-phobia, hydro-mel, &c., are exceptions, and come from ὕδωρ, I answer that they come from ὕδρορ, the unemployed dative of ὕδωρ, which borrows its established dative ὕδατι from its unemployed root ὕδω.

M. Chaussier has given the new name of pneumo-gastric (for lung-gastric) to the eighth pair of nerves. If this were correct, pneumo-thorax should mean lung in the thorax. But the genitive of πνεῦμα is πνευμόνος, and the name should therefore be pneumono-gastric.

counterbalance its soothing properties. Where structural disease exists in the stomach, the diseased surface may not bear such a stimulant except in the minutest quantity; and a minute quantity, even should it arrest the vomiting, is very likely to aggravate pain. Although some do not dislike it, and others who dislike it at first actually find it at length rather agreeable, a few are so disgusted with the smell of tar that they are made sick by any attempt to take Creosote: but, with these exceptions, I know of no medicine at all to be compared with it in arresting vomiting. I have repeatedly seen it succeed after the failure of prussic acid, which is the most powerful remedy I previously was acquainted with in subduing this action of the stomach. Different doses and different frequency of repetition are requisite to produce this effect in different instances. The dose may easily be too large or too small. More than two drops I have sometimes seen aggravate the sickness, and sometimes I have begun with three drops every three hours, and been obliged even to give more. One or two drops may be given every hour or half hour till the vomiting ceases; and, if a dose is rejected, it should be repeated immediately. The first dose frequently succeeds. I could detail fifty cases of vomiting in the practice of myself and friends, and both in public institutions and in private practice, illustrative of its extraordinary power in this respect. In colic and enteritis it arrests the vomiting long before the bowels are opened, and purgatives are thus retained which were all rejected previ-

ously to its exhibition. Even in a case of severe vomiting, apparently from arsenic, which usually excites inflammation of the stomach, I have known it succeed astonishingly, as well as in the only case of vomiting from pregnancy in which I have had an opportunity of trying it: and in sea sickness, in which, however, my experience of its power is yet limited, though a number of my friends have promised to take it abroad with them. Of course, as it subdues vomiting, its power is equally great over nausea. When *properly* given in nausea or vomiting, without inflammation or structural disease of the stomach, I have not yet known it fail, except in one remarkable case.—A boy, fourteen years of age, had, for two years, instantly vomited whatever he took, without effort and without any diseased condition with which the occurrence could be connected. He was rather weak, thin, and pale, but otherwise in perfect health, except that he confessed being rather giddy and had a habit of knitting his brows,—symptoms which at length made me suspect that the cause was in his head. Creosote, as far as it was tried, failed in him, though given in doses of three drops, and repeated frequently, so frequently in one day as thirty times. I proposed augmenting the dose, but he was unhappy at being from home, and left the Hospital of the University*.

* I have seen but three cases of this description of vomiting,—cases in which the vomiting was chronic and not a symptom, but the disease. The first occurred in a girl, who had been long under treatment when she was brought to St. Thomas's. Prussic acid failed, and she was taken home before I could make further at-

I was led to discover the power of prussic acid over vomiting, by witnessing its effects in gastrodynia, when given in mistake; analogy inducing me to fancy that, as it lessened pain of the stomach, it might lessen inordinate action*. When I was sure of the power of hydrocyanic acid in this particular, as well as over simple nausea, I hoped it might be equally serviceable in preventing nausea and vomiting from medicines calculated to disagree with the stomach; and one of the most useful properties of that acid is, when given simultaneously with, or, what is better, a quarter of an hour before, medicines which frequently disagree with the stomach, to enable the organ to bear them, in moderate doses at least, with impunity.

My discovery of the power of Creosote in preventing vomiting was not the result of reasoning. The medicine was given in cholera to see what it would do, and it arrested vomiting. When, however, I had ascertained this power, I was led, as in the case of prussic acid, to enquire whether it would, like that agent, prevent other medicines from exciting nausea and vomiting; and I find it,

tempts to relieve her. The last case is now under my care: and is that of a young man who, though otherwise in perfect health, has vomited his breakfast invariably for five years. Upon close enquiry, I find he sometimes experiences giddiness and pain of the temples. Creosote has hitherto failed in him.—Aug 14.

* Numerous Cases illustrative of the Efficacy of Hydrocyanic or Prussic Acid in Affections of the Stomach. 8vo. 1820.

by daily experience, even to surpass prussic acid in this particular. I have enabled the stomach to bear hydriodate of potass, sulphate of copper, sulphate of iron, and many diuretics, &c., in much larger quantities than those previously rejected. Just as I have often seen it arrest vomiting, where prussic acid had failed, so I have seen it enable the stomach to bear medicines, when they had been rejected in spite of prussic acid.

Although I have sometimes seen mere gastrodynia unrelieved by it, and have found this symptom subdued perhaps more by prussic acid, numerous cases of general derangement of the stomach, liability to nausea or vomiting, acidity, pain, &c., often yield to it in a most remarkable manner. Where the chief or almost only symptom has been flatulence, I have occasionally seen this unrelieved or augmented. When gastrodynia or flatulence has been united with other symptoms of derangement of the stomach, I have combined prussic acid and Creosote with great benefit. Indeed, when either fails in dyspepsia, I should advise their union. Prussic acid has this advantage over Creosote, that it is admissible when a degree of inflammatory condition exists in derangement of the stomach, although it cannot directly control the inflammatory portion of the disease. A perseverance in a moderate employment of Creosote frequently restores the powers of the stomach in the most satisfactory manner, not only as tar-water undoubtedly does, but I should imagine very

far better, since Creosote bears the same medicinal relation to tar that quinine does to cinchona.

Bishop Berkeley, in his answer to those who accused him of pretending to discover a panacea, replies that, to speak out, he freely owns that he suspects tar-water is a panacea ; and, as the old philosopher cried aloud, says he, from the house-top to his fellow citizens, *Educate your children*, so I confess, if I had a situation high enough, and a voice loud enough, I would cry out to all the valetudinarians upon earth, *Drink tar-water*. In thus extolling a remedy, he ruined it ; and, as his enemies bitterly hinted that the lines of Pope,

“ Manners with candour are to Benson given,
To Berkeley every virtue under heaven,”

were calculated really to ruin his character, so they urged that the extravagant praises bestowed by himself upon tar-water proved its worthlessness. Yet the experience of many with tar-water, and my own with Creosote, satisfy me that, however absurd was the excellent and acute bishop's panegyric, he really had been surprised, as he says, to see persons, fallen away and languishing under a bad digestion, after a few weeks recover a good stomach, and with it flesh and strength, so as to seem renewed by the drinking of tar-water.

In regard to the bowels, it in general has no effect upon them, so that aperients are as requisite as if it

was not taken. It sometimes augments the urine very much, and, if this is put into a bottle, it may be distinctly smelt in the fluid when the cork is withdrawn. I once saw it, in doses of a minim three times a day, cause micturition nine times in an hour. Three trials were made of it, but always with the same effect. The gentleman habitually made water nine times in the twenty-four hours. In another case, in doses of three minims, it produced severe strangury. It appears in many respects to resemble the oil of turpentine.

In all these investigations I remained carefully ignorant of what others had said of the remedy, lest my mind should receive any prejudice; but I casually read an account of a case of diabetes cured by it, and resolved to ascertain whether the remedy really possessed any power over this affection.

On the 13th of August, I was requested to see a gentleman from the country, about sixty years of age, plethoric, with a full pulse: his mind was dull, and he had suffered two attacks of paralysis: his tongue was very yellow, and black at the centre towards the root. He told me his complaint was extreme thirst, so that he was drinking all day, and was enraged if drink were not taken to him the moment he called for it. He said he had been ill four or five years, was much worse always in autumn, much better in spring. He passed but four pints of urine, according to his own account, but confessed that he

made water twelve times a day and three times in the night. I found it contain a large quantity of sugar. I ordered him Creosote. I saw him again on the 10th of September, when he was making water but six times in the day and once in the night. It contained scarcely any sugar; his tongue was clean, and he told me that he felt perfectly well in every respect. The qualities of the urine I could not ascertain.

On the 8th of November, a young medical gentleman, who had been labouring under diabetes for eight months, consulted Dr. Kerrison and myself. He had been in hot climates. He was making twenty-four pints of urine a day; it contained much sugar; its specific gravity was 1038; it was very frothy. Everything, he said, turned acid upon his stomach. He was exceedingly costive, and had been impotent for two years. We agreed that he should take Creosote. On the 25th of November, he called to say that his spirits were greatly improved, and his strength much increased: the change, indeed, in his general health was surprising. The state of his urine I could not examine, nor have I heard of him since.

On the 19th of November, a gentleman aged about forty applied to me, who had laboured under diabetes for six months, and usually made about twelve pints of urine in twenty-four hours. It contained sugar, and its specific gravity was 1031. His skin was always moist. He took Creosote. On the 27th of November I saw him again, when his thirst

was less, his health better. In December I saw him a third time; he had then no thirst, made but about three pints of urine in the twenty-four hours, and felt his general health surprisingly improved. The urine, however, though much less in quantity, was 1037. I have since heard that he is doing well.

The cases are very imperfect; but the disease is comparatively so rare, that I thought it worth while to relate them.

Such are the facts which have hitherto occurred to me in regard to Creosote. That it is applicable to certain diseases and certain forms of diseases only, is evident. But that, with due attention in its administration, it is an excellent remedy, must be equally evident; and it probably is applicable to many other cases than those to which I have been induced to apply it.

Of its external application I can speak favourably. When an ulcerated surface has required a stimulus, or when a slough, or unhealthy, perhaps offensive, discharge existed, I, like others, have seen it of great utility. As it prevents or arrests putrefaction, and removes all taint in dead matter, we cannot be surprised at its removing the offensive nature of discharges, whether from mucous membranes or ulcers, and preventing the injurious effects of diseased animal matter upon the part with which it is in contact. When the contents of the intestines have been very offensive, I have impregnated clysters with it advantageously; and I have employed it as a wash in

mercurial fœtor as well as ulceration, and in fœtor of various parts of the system. I have seen foul ulcers become clean, and ulcers of long standing have sometimes healed rapidly on its application. Its agency in vomica and bronchorrhœa is clearly the same as in its external application. Wherever tar is useful, it may be expected to be equally so. In two cases of pruritus podicis it lessened the distress considerably after every thing else had failed. Here it was applied pure, as in cases of tooth-ache, which it often at once removes. But usually from half a drop to two or three, diffused by mucilage in an ounce of water, is sufficient, though its application must be very frequent. It appears to have been sometimes useful in porrigo, employed pure or variously diluted.

P.S. August. It is now a year since I began my trials of Creosote,—the period to which my trials of every other remedy extended before I communicated my results to the profession; and my experience, subsequent to my paper being read in the Society, confirms every thing I advanced both negatively and positively. Its extraordinary power over nausea and vomiting, and dyspepsia, I have witnessed in at least fifty more cases, in which the stomach was neither inflamed nor diseased in its structure; a case of severe hiccup has at once yielded to it. I have prescribed it in a fourth case of diabetes, and am able to give a further history of the three already mentioned, but which warranted no conclusion as to the curative

powers of the remedy. Although all the three found their health improved, I stated that the specific gravity of the urine of two was unaltered. The last of the three appears to have neglected his medicine, to have gone abroad, and consulted many persons; and he died, Dr. Kerrison informs me, two months ago, but under what circumstances we are ignorant. The second I saw two months since, not at all worse, but not farther improved, his urine being of the same specific gravity. The first I saw six weeks back, and he complained again of thirst and frequent micturition, but his appearance was not worse; indeed it was very good. I had no means of ascertaining the quantity or specific gravity of his urine. In none was the dose pushed very far. The fourth case is now under treatment in the North London Hospital. The patient is a young man, and takes eighteen drops of Creosote three times a day. He has had a large abscess in the loins, and one of his lungs is ulcerated; but his urine is reduced from thirteen to seven pints, and his health is improved. The specific gravity of his urine is reduced. It was 1037 at his admission above three months ago; it is now 1030. It is remarkable that he took his twenty-two drops of Creosote in only an ounce of water, so that it burnt the mouth of every body else who tasted it. On my learning this, I begged him to take it well diluted, and it instantly produced vertigo and headache. The dose is now twenty, and agrees perfectly, though diluted with only an ounce of water.

Tar-water was celebrated in chronic diseases of

the skin. In a case of severe acne indurata, which had lasted some years in spite of all treatment, a perseverance of six months with Creosote accomplished all but a cure; and the face still remains in the state of improvement which was effected. In a chronic pustular disease, not remediable by antiphlogistic measures, I certainly never saw such good from any medicine before. The woman began the remedy in November. Her urine became black in February, and remained so for a short time. I was not informed of the circumstance till after it had ceased, and did not see the urine; and I understand that other patients taking the remedy in the hospital have occasionally experienced the same effect for a short time. Some private patients have described the colour of the urine as green.

But I am anxious to mention its effect in two cases of chronic glanders, affecting one nostril and the frontal sinuses with pain and a copious and foetid discharge. The disease in the two persons was clearly contracted from a glandered horse, and I purpose doing myself the honour of laying the facts before the Society early next session, as I never read of or met with an instance like these in the human subject; former cases having been acute glanders, or chronic farcy. The sedulous injection of a weak solution of Creosote up the nostril, removed the whole of the symptoms, after a very few weeks, and I hear the patients are still well. I need not say that the disease has always hitherto proved fatal in the horse.

ON THE
FUNCTIONS
OF
THE FŒTAL KIDNEY.

BY ROBERT LEE, M.D., F.R.S.,

VICE-PRESIDENT OF THE SOCIETY;

PHYSICIAN TO THE BRITISH LYING-IN-HOSPITAL, AND SAINT
MARYLEBONE INFIRMARY;

LECTURER ON MIDWIFERY AT ST. GEORGE'S HOSPITAL.

READ MARCH 10TH, 1835.

IN the works of systematic writers on physiology, there is little or no positive information contained respecting the functions of the kidneys previous to birth. Haller, Blumenbach, Meckel, Bostock, and Mayo have scarcely alluded to the subject, and Magendie states that the condition of the foetal kidneys has not been ascertained. All the glands employed in digestion have a considerable volume in the foetus, and seem to possess some activity. The action of the others, he adds, is little known. It is not known, for example, whether the kidneys form urine, or whether this fluid passes by the urethra into the cavity of the amnion. Abernethy was of opinion that

the kidneys did not secrete urine till after birth, though some of the older writers believed the liquor amnii to be chiefly formed of the urine of the child.

The following facts seem to demonstrate that the kidneys of the human foetus, like the liver, intestinal canal, and thymus gland are in a state of activity, and perform each their respective function prior to birth.

On the 2d of January, 1835, Mr. Hay, of Osna-burgh Street, attended a patient who was delivered in the 8th month of a still-born female child. It had a double hare-lip, both its feet were clubbed, and the abdomen was so large that it passed with difficulty through the pelvis. Mr. Hay examined the body on the following day, and he found the distension of the abdomen to arise from an accumulation of fluid within the kidneys produced by an impervious state of the ureters. The right kidney, which resembled a thin cyst filled with a watery fluid, was larger than the head of the child, the left did not exceed half this bulk. Both kidneys were removed from the body without the fluid they contained having escaped, and were in that state presented to me by Mr. Hay. An opening having been made into the pelvis of the left kidney, $\frac{3}{4}$ iv of a fluid resembling urine flowed out; the pelvis of the right kidney contained nine ounces of a fluid having the same appearance, which was examined by Dr. Prout.

The following letter from Dr. Prout contains an account of the chemical composition of this fluid.

“ DEAR SIR,

“ I SEND a short account of the fluid from the kidneys of a foetus in whom the ureter was found impervious.

“ The fluid was of a deep brown colour, somewhat like diluted porter or table beer, transparent, and without any remarkable smell. Specific gravity about 10·12. Very slightly acid. On exposure to heat, it became opaque and deposited flakes of albuminous matter, which was next examined by the addition of an acid. The deposit was of a deep brown colour. The separated fluid was nearly colourless, and deposited on cooling a considerable quantity of lithic acid crystals.

“ When evaporated to dryness and treated with alcohol, that menstruum was found to take up a principle strongly acid, and which assumed readily an imperfect crystallized form. I cannot venture to give this principle a name; it somewhat resembled the acid called amniotic, or rather allantoid, in some of its properties, but differed from it in others. The alcoholic solution gave at first faint and somewhat doubtful traces of urea; on standing several days these became very distinct. After the albuminous matter was separated, ammonia produced a deposition of triple phosphate.

“ These results prove beyond a doubt that the fluid was of an urinary nature, and render it probable that as the liver in the fœtus secretes bile, so the kidneys secrete urine long anterior to birth; and that in a perfect state of the organs the fluid is constantly escaping through the bladder and mixing with the amniotic. This fact has been often suspected, or rather taken for granted, but has never to my knowledge been proved.

“ I send a portion of the fluid containing a deposition of lithic acid crystals.

“ Yours,

“ W. PROUT.”

“ Sackville Street,

“ January 9, 1835.”

The left kidney and ureter, which terminates in a cul de sac, form preparation No. I.

The right kidney, the bladder, and the other malformed urinary and uterine organs, form the preparation No. II.

On the 12th of February, 1835, I induced premature labour for deformed pelvis, in a patient who was six months pregnant. Thirty-two ounces of pure liquor amnii flowed through the slender silver catheter with which I punctured the fœtal membranes. It was of a straw colour, its specific gravity was 10·10. It was neither acid nor alkaline. Neither Dr. Prout nor Dr. Bostock could discover any trace

of urea or uric acid in its composition. This observation renders it probable, that at the sixth month of utero-gestation, a very small quantity if any urine is formed by the foetal kidneys, and passes into the amnion.

During the last two months I have used every exertion to procure portions of pure liquor amnii at the end of pregnancy for chemical analysis, but without success. The presence, however, of benzoic acid and urea, detected in the liquor amnii of the human subject, by Tromherz and Gaugert, proves that the urine of the foetus flows from the bladder and mixes with this fluid in the latter months. “Au reste,” observes Berzelius, “la presence de cet acide precipité et de l’urée dans l’eaux de l’amnios de la femme attesterait que l’urine du foetus s’écoule et se mele avec la liqueur amniotique, puisqu’il n’y a pas de liquide allantoïque special chez l’homme.” *

Mr. Howship, to whom I mentioned the preceding facts, has pointed out to me the following interesting cases, contained in his valuable Treatise on the Diseases of the Urinary Organs.

In October, 1810, I was requested by my friend Dr. Merriman to open the body of a male infant, born alive in the eighth month; it languished apparently in pain, and died the same evening.

* *Traité de Chimie*, par J. J. Berzelius, traduit par M. Elsinger. Tom. VII., p. 566.

The feet were distorted, the anus imperforate, and the lower part of the abdomen occupied by a large circumscribed tumour. Dividing the parietes, this tumour protruded, white, elastic, and filled with a fluid. On each side of this tumour was a long membranous tube, large as the finger and curiously contorted; these also were evidently filled with a fluid. The central cyst was comparatively dense, firm, and opaque; the convoluted tubes much thinner and nearly transparent. The tubes terminated above, on each side the loins, in what appeared to be a mass of small hydatids; below they passed into the pelvis with the principal tumour. These parts engrossed nearly the whole cavity of the abdomen, the other viscera forming a very small proportion of its contents. These singular appearances were produced by the bladder, ureters, and kidneys having been subjected to the effects of excessive distension from accumulation of urine. The parts were removed, but before this could be done, it was found necessary to puncture the bladder, when a jet of clear limpid urine sprung forth with violence. The kidneys, ureters, bladder, and urethra were then dissected out, and the difficulty cleared up by examining the urethra. On passing a large bristle from the external orifice half an inch along the canal, it was found to be imperforate; and by introducing a fine silver probe in the opposite direction into the urethra, from the cavity of the bladder, it appeared that the canal was impervious for the extent of a quarter of an inch. The quantity of urine contained in the

bladder alone, was at least seven or eight ounces. The coats of the bladder had attained a very extraordinary degree of strength and thickness, probably to resist distension. It had, notwithstanding, given way posteriorly, where a large pouch or cyst was formed. The convoluted appearance of the ureters was as remarkable as their great increase in magnitude. The kidneys resembled a congeries of small hydatids, no larger than garden peas, loosely connected together by a cellular texture. There was no visible remains of, nor any appearance at all resembling the natural structure of the kidneys, yet, from considering the appearances, it was clear in my opinion they must have continued to secrete urine till the infant died; an event probably consequent to continued pain and irritation, from the state in which the urinary organs were found on dissection.

Dr. Ivanove, of St. Petersburg, on examining Mr. Howship's drawings of the preparation, stated that he had dissected a child born at the full time who lived 48 hours, when, the urethra being imperforate, the bladder was much, but the ureters still more, distended with urine. It was supposed by those present, that these changes might have been the result of secretion after the birth.

Sir B. Brodie informed Mr. Howship that a male foetus, of nearly the full time, was brought into the dissecting room, in whom the external orifice of the urethra was deficient in consequence of original mal-

formation. The bladder was found moderately distended with urine; the ureters were also distended with urine, as were the infundibula and pelvis of each kidney. The urine was examined by M. Brande, who found it to have the other properties of urine, but to have no uric acid in its composition*.

M. Billard has related the case of a child, who was brought into the Infirmary four days after birth, having a round soft tumour in the lumbar region. The child lived for a month, during which time it gradually became weaker and more emaciated. After death, effusion was found to have taken place into the ventricles of the brain. The right kidney consisted of a mass, as large as a goose's egg, of semi-transparent lobules, irregularly agglomerated together, forming so many small cysts, full of a white inodorous fluid. These cysts communicated with one another, and those nearest the pelvis opened into this reservoir, which was itself filled with a similar fluid. The kidney had no trace of the natural structure, and its pelvis terminated in a *cul de sac*. The ureter presented the natural appearance near the bladder, into which it opened in the usual manner, but on proceeding upward to the kidney, it assumed the form of two small impervious cords, which became further subdivided, and were applied to the kidney in the form of a goose's foot. The right kidney was

* A Practical Treatise on the most important Complaints that affect the Secretion and Excretion of the Urine. By John Howship. London, 1823, p. 376.

more than usually developed. The bladder, very little dilated, contained a turbid urine, in which were found a great number of small particles of gravel as fine as sand.

M. Billard dissected the body of a full grown male child, who was still-born on the 10th of June, 1826. The abdomen presented a round projecting tumour, like a cone, of which the umbilicus was the summit.

On opening the abdomen, the intestines were found pressed upward and backward by a large sac, which filled all the cavity. This sac was the bladder, enormously distended by a white inodorous fluid which did not render turnsol paper green. The internal orifice of the urethra was closed. On introducing a sound, it was found that the canal of the urethra gradually diminished in diameter, and at last became completely obliterated. The ureters were pervious. They opened into the bladder, but as they extended upward to the kidneys they were found greatly distended on each side; both kidneys being nearly as large as a hen's egg, presented the same lobular structure as in the preceding case. The lobules were, however, smaller, less transparent, and were partly covered with the cortical substance, but the calices and pelvis were larger and more distended than usual. A white inodorous fluid filled the vesicular lobules, which communicated with one another and opened into the pelvis.

These observations, M. Billard remarks, might serve to prove that the excretions of the fœtus, at least those of the urinary organs, are passed in the natural state out of the body, and probably deposited in the liquor amnii, for where there exists an obstacle to the passage of the urine, it flows back into its reservoirs, and distends them preternaturally, as we see in adults who are affected with stricture of the urethra or paralysis of the bladder. "This remark," M. Billard adds, "may hereafter find a place in the history of embryology."*

P. S. Since the preceding paper was presented to the Society, I have received from Dr. Wilson, physician to St. George's Hospital, the following interesting communication:—

"MY DEAR SIR,

"IN a volume of MS. 'Dissections of Morbid Parts,' registered by my late father, I find the enclosed account of what are termed 'hydatids' in the kidneys of a newly born infant, which you may perhaps consider interesting, in connexion with your late enquiries.

"Believe me, dear Sir,

"Yours faithfully,

"J. A. WILSON."

"Curzon Street, May Fair,

"March 23, 1835."

* *Traité des Maladies des Enfants*. Paris, 1833. P. 451.

*“ Copy of a MS. Dissection by the late
James Wilson, Surgeon.*

“ January, 1787. Mr. Cruikshank delivered Mrs. Tylcotte, Oxford Road, of a child, apparently well ; it, however, died in about a quarter of an hour after it was born. He opened it the day after, and found both kidneys gone entirely into hydatids, and enlarged, each of them, to the size of a man’s fist. The ureters were exceedingly convoluted and dilated, and filled with a fluid, as was the bladder prodigiously enlarged ; also the muscular fibres of it upon the stretch and exceedingly distinct : it was nearly the size of a man’s bladder.”

OBSERVATIONS
ON
FRACTURES
OF THE
BONES OF THE PELVIS.

BY HENRY EARLE, F.R.S.,
PRESIDENT OF THE SOCIETY.

READ APRIL 14TH, 1835.

FRACTURES and dislocations of the bones of the pelvis must always be regarded as very serious accidents, and are often attended with fatal consequences, from the injury inflicted on the important viscera contained within the bony cavity.

They are most commonly the result of great violence, either from falls from considerable elevations, or from the pelvis being firmly compressed by great weights, or between two opposing forces. The diagnosis of some of these accidents is at times obscure, and the extent of injury cannot be ascertained during life.

Having met with some well marked cases of fracture of the os innominatum extending into the ace-

tabulum, in which the same diagnostic marks presented themselves, and in one of which I had an opportunity of verifying the opinion entertained during life, by an examination which took place some months after the receipt of the injury, I conceive that a short report of the cases may not be uninteresting to the Fellows of this Society.

I am further induced to submit these cases to their consideration, from the circumstance of the most prominent characteristic symptom which existed in these cases having been overlooked by all the authors whom I have consulted on this subject. Sir Astley Cooper, in speaking of these accidents, states that they are liable to be mistaken for dislocations of the femur. It will be seen, in the cases about to be related, that the symptoms more nearly resembled fracture of the neck of the femur. From considering the subject, and the nature of the accident, I am at a loss to understand what species of dislocation such an accident would be liable to be mistaken for. The direction of the force applied would lead to the suspicion of fracture, and the position and direction of the limb would clearly prove that no dislocation had taken place. But it will be better to proceed with the relation of the cases, and afterwards to discuss the phenomena which presented themselves.

CASE I.

—— Booth, aged forty, was admitted into St. Bartholomew's Hospital, in October, 1829, with a

fracture of the pelvis, caused by his falling from a height of thirty feet upon the left side. He had lost all control over the left lower extremity, and could not raise it from the bed. There was no visible shortening of the limb, but the foot was everted. Any attempt to rotate the limb caused great pain, and was accompanied with very sensible crepitus when the hand was applied over the hip-joint. On applying the two hands to either side, with a view to compare the relative position of the trochanters with the anterior spines of the ilia, that on the left side was not nearly so prominent as that on the sound side; it appeared indeed nearly on a level with the anterior spine of the ilium, and could with difficulty be felt. On pressing the trochanters the patient complained of deep-seated pain in the hip-joint. The patient was placed on a double inclined bed, a broad leather bandage was passed round the pelvis and buckled firmly in front, and the feet were secured to the foot-board. Subsequently a bandage was applied round the upper part of the thigh, to press upon the trochanter, and to support the whole more firmly. A catheter was passed, but no injury had been sustained by the bladder or urethra. It was necessary, however, to employ the catheter for some time, as the patient could not empty his bladder without it.

Some days after his admission he had a severe attack of pneumonia, which required active depletion, and which increased a cough to which he had been liable for some time.

No sinister circumstance occurred in the treatment of the fracture, and the patient was discharged in about eight weeks after the receipt of the injury, at which time he could walk nearly as well as before the accident.

Soon after leaving the hospital, he was admitted into St. George's Infirmary, where he died of disease of the chest.

The pelvis was examined after death by Mr. Howship, through whose kindness I am enabled to present to the Society the injured bones. It will be seen that the fracture extended in two directions through the acetabulum ; that there was an extensive comminuted fracture of the ilium, with some displacement ; and that the os pubis was broken in three places. The reparation has been very complete ; and it is interesting to observe how nature has guarded against any considerable deposit of new bone within the articulation, which might have interfered with the functions of the joint, although there is an abundant deposit of callus around the other parts of the fractured bone.

CASE II.

John Samuel Kilpin, aged forty-four, a robust, healthy looking man, was admitted into Harley's ward, on the 29th of August, 1834. He stated, that whilst at work on the previous day he fell from

a height of about sixteen feet upon his left side, and injured his hip and elbow. Immediately after the accident he was able to walk, with pain and difficulty, a distance of about fifty yards. But at the time of his admission he had no power of using or moving the limb.

On examination, the leg of the injured side was slightly everted, but not perceptibly shortened; a fracture of the crista of the ilium was readily detected, which apparently extended into the acetabulum, as a crepitus could be distinctly felt when the limb was rotated and the hand applied over the joint. The whole limb could be moved with great facility in different directions, and in rotation and abduction a sensation was communicated to the hand, as if the head of the femur sank more deeply than natural into the acetabulum, that cavity affording no resistance to the force of the long lever of the lower extremity. On comparing the two trochanters, *that on the injured side was not so prominent, and could with difficulty be felt.* I entertained no doubt of the nature of the case, and directed a similar plan of treatment to be followed as in the last mentioned case. The urethra and bladder were examined with a catheter, and proved to be uninjured. On examining the arm, I found a compound fracture of the olecranon, with much synovial discharge. The olecranon was quite separated from the shaft of the ulna, but there was no disposition to retraction of the fractured portion, which retained its natural posi-

tion in the cavity at the back of the humerus. As there was much tumefaction around the wound, the arm was kept steady at an angle of about 160 degrees, with a pasteboard splint in front of the arm and fore-arm, and leeches and a bread and water poultice were ordered to be applied to the elbow. He was twice bled to the extent of $\text{̄}xvj$; and salines with antimony were given, and leeches were applied several times to the elbow.

The case went on most favourably; not a single untoward circumstance occurred, and he was discharged well in about three months, without any shortening of the thigh, and with perfect motion in his elbow joint. The olecranon united by firm ligamentous union which admitted of a slight lateral motion of the fractured portion.

Thesymptoms in both these cases very closely resembled each other; in both, the nature of the injury was the same, namely, a fall on the side. In both, the most marked symptoms were the *loss of prominence of the trochanter*, and the freedom of motion of the joint, particularly of abduction, which is always attended with the severest pain in fractures of the neck of the femur. The nature of the accident was that which most commonly produces fracture of the neck; the total loss of power over the limb, and the eversion of the foot, resembled what occurs after that accident; but there was no sensible degree of shortening, there was greater freedom of motion, and

instead of the trochanter being more elevated and prominent, as in fracture, it was below its natural level when compared with the healthy limb.

The second case was rendered more interesting by the circumstance of the compound fracture of the olecranon,—an accident on which I find all systematic writers silent ; but which is of great importance, as involving some practical questions of moment. It is now generally admitted by the best authorities, that in simple fracture of the olecranon the best position to keep the arm in is that of flexure to about 160 degrees, which admits of the divided portions being kept most accurately in contact, without incurring the risk of opening the inner or outer edges of the fracture. But this position would render the limb nearly useless in the event of ankylosis ; and as in compound fracture of the olecranon the wound communicates with the cavity of the joint, there is of course some danger of suppuration taking place within that cavity, which might be followed by ulceration of cartilage and ankylosis. Should the inflammation run high, and should there be any risk of ankylosis, it would of course be far preferable, without regard to the broken olecranon, to keep the elbow steadily flexed to a right angle. This is the second case of compound fracture which has occurred in my practice, and both were restored without lameness.

The only practical rule which I can venture to lay down is, to treat the case in the first instance as

common fracture, only by repeated leechings, and a strict antiphlogistic treatment, endeavouring to keep down the inflammation. Should the progress of the case lead to the probability of ulceration of cartilage and ankylosis, sufficient time will be allowed to alter the position of the limb to that of flexure to a right angle. Until such circumstances arise, we are, I conceive, warranted in attempting the more perfect restoration of the limb by keeping the fractured ends in contact.

I have met with two other cases of injury of the pelvis, in which the same symptoms presented themselves. One occurred in the person of a medical friend, Mr. Green, of Marlborough Street, who was forcibly jammed between a turnpike gate and a wheel, in consequence of his horse running away with him. In this case the patient recovered, but halts a little with the affected limb, which is slightly everted, and the trochanter is not so prominent as it ought to be.

The other case occurred lately at St. Bartholomew's. James Cock was driving a cabriolet, and was thrown from his seat in consequence of the horse falling. He fell on his side, and was so immediately deprived of all power of moving the right lower extremity, that he could not stir from the position in which he fell, although in great danger of being run over by a waggon. When examined, it was found that he had no power of moving the limb, and the trochanter was below its level; there was also some

crepitus felt when the limb was rotated. The urethra was examined, but no injury was detected. The patient was treated for fractured pelvis, and recovered in about eight weeks, at which time he only complained of pain near the ascending ramus of the ischium. All these patients were placed on my double-inclined beds, which are particularly adapted to such cases, admitting of perfect rest for the injured pelvis and lower extremities, and every facility for cleanliness and the evacuation of the bowels.

I venture to subjoin some cases of complicated injury to the pelvis, in each of which, circumstances presented themselves of sufficient interest to deserve being recorded.

CASE III.

In the winter of 1833, I was called to a man, between 60 and 70 years of age, who had been riding a young colt without a saddle. By a sudden start of the colt he was forcibly thrown forward upon the withers. He experienced very severe pain, was unable to retain his seat and fell from the horse. When I first saw him, he was lying upon a bed in a very faint, exhausted state, and appeared like a patient dying from internal hemorrhage. There was no external wound, but blood was flowing freely from his anus, and had run through the bed on to the floor. There was great flatness of the pubes, and the pelvis appeared broader than natural, allowing a

greater separation of the upper part of the thighs. On placing my hand on the front of the pubes, I found no resistance, and over the symphysis and behind the scrotum, extending to the perineum, there was extensive effusion of blood. I conceived that the ossa pubis were fractured, and apprehending effusion of urine, I carefully introduced a full-sized catheter, which, on arriving at the bulb, took a direction much to the right side, and then entered a great cavity, evidently not the bladder. I immediately made a free incision in the perineum, and let out a large quantity of blood and urine. On introducing my finger, I found that the symphysis pubis had been torn asunder to a great extent, and I felt a smooth projecting body, which at first I supposed to be the distended bladder; but on more accurate examination I found it to be the internal surface of the bladder, into which my finger readily entered, and that the prominence was caused by the pressure of the intestines above. On tracing my finger over the surface, the moment I reached the trigone, the patient exclaimed that he wanted to make water. On repeating the contact of my finger with this spot, he was again most urgent to be allowed to make water. The patient lived forty hours, and on the following day I again gently introduced my finger and touched the trigone, when he again was most desirous of passing water.

On examination after death, the symphysis pubis was separated to the extent of three inches, and the

sacro-iliac symphysis on the left side was nearly separated, and gaped to the extent of more than an inch. The prostate gland had been torn away from the bladder, leaving a large aperture communicating directly with the cavity of that viscus. The urethra still retained its connexion with the ligament on the right side of the pubes, and the prostate gland hung loose in a cavity filled with coagulum. An extensive laceration communicated with the rectum.

This case is interesting in many respects. It shows what extensive injury may follow an apparently trivial accident, when circumstances are favourable to such an occurrence. The man's legs being separated at the moment of being thrown forward, no doubt favoured the accident, and caused the forcible disruption of the powerful union of the ossa pubis at their symphysis, and the consequent opening of the sacro-iliac symphysis, both of which are generally considered so strong as to admit more readily of fracture of the neighbouring bones than any dislocation at the symphysis. The case likewise illustrates very powerfully the importance of immediately examining the state of the urethra in all cases of fracture or injury of the pelvis, as the only chance of safety is in the securing an exit for the urine, when the urethra is torn asunder. But the most important feature in the case is the evidence which it affords of the correctness of the opinion which has been entertained by

some anatomists, of the mucous membrane covering the trigone possessing a peculiar sensibility, and that the sensation of a desire to make water is first excited in this part;—a position which at first appears difficult to reconcile with the known fact that this part of the bladder is most exposed to the continual drip of the urine, as it enters through the ureters.

It must be admitted that this opinion receives much confirmation from the well known facts, that when a catheter or other instrument is introduced into the bladder, so as to touch this part, a distressing urgency to pass water is experienced, even when that viscus is empty, and still further by the circumstance, that when a stone is in contact with this part the same urgency is experienced, which is relieved by change of posture and consequent removal of the stone from pressing on this sensitive spot. It is true that these facts have been adduced by authors favouring such an opinion as has been stated above, but in the present case I had the strongest confirmation of the peculiar sensibility of this part, as I repeatedly traced my finger over the other parts of the bladder without causing any particular uneasiness, but the moment I touched the trigone the patient most urgently entreated to be allowed to make water; thus affording the strongest possible evidence of the correctness of the opinion that this portion is endued with a peculiar degree of sensibility. I was enabled also to ascertain that the mucous membrane at this

part remains quite smooth when the rest of the bladder is thrown into folds.

CASE IV.

A short time after the occurrence of the last mentioned case, a man was brought into the hospital, having been crushed beneath one of the ponderous iron gates at the new Post Office. The ossa pubis were broken and driven in, and there was extensive effusion of blood into the scrotum, and beneath the integuments covering the pubes, and in the perineum. On passing a catheter, with the finger in the rectum, it was ascertained that the urethra was torn, and that there was extensive fracture of the pubes and ischia. The continuous portion of the urethra into the bladder could not be traced, and an incision was made into the perineum, but no urine followed. I was called to him in the evening, and found the bladder distended, but on gently compressing it urine flowed freely through the wound. In a few hours he ceased to exist, and on examination nine of his ribs and the sternum were found fractured, and the lung on the right side was deeply lacerated. There was a large rent in the liver, and much blood effused within the abdomen. A fracture extended through the body of the pubes on each side, and likewise traversed the ascending rami of the ischia. The pubes were greatly depressed, and the rectum was torn across through the muscular part just beyond Camper's ligament, which remained entire. The lacerated

portion nearest the bladder was partially plugged with coagulum, which explained the circumstance of the urine not escaping into the cellular membrane.

The entire separation of the urethra in this case proved the necessity for the free opening which was made in the perineum, which would probably have saved the patient's life but for the extensive injury to other vital organs.

CASE V.

I was called last year to a very powerful young gentleman, who had thrown himself out of a three-pair of stairs window into the area, and had alighted upon his left foot. When I reached him he was obviously dying from internal hemorrhage. His left foot and ankle had sustained much injury: the os calcis and astragalus were broken into numerous fragments, which protruded through a lacerated wound. The whole of the metatarsal bones were separated from the tarsal. The left inguinal and iliac regions were distended with blood, and it was obvious that the bones of the pelvis on that side had sustained extensive injury. A catheter was passed, which readily entered the bladder and emptied its contents. He became violently convulsed, and died in about an hour after the occurrence of the accident.

On examination the whole os innominatum on the

left side was separated at the symphysis pubis and the sacro-iliac symphysis, and was forced upwards to a considerable extent. The common iliac vein on that side had been torn through, and the pelvis was filled with blood. It is worthy of remark, that in this case, notwithstanding the extent of injury sustained by the foot, the force should have been so great as actually to separate the symphysis pubis and sacro-iliac symphysis, and to drive the whole os innominatum upwards, yet that there should have been no fracture of the neck of the thigh-bone nor of the acetabulum. Fracture of the neck of the femur is said to be sometimes caused by perpendicular falls, but I never yet met with an unequivocal case of such an accident.

It will no doubt be observed, that in the narrative of these several cases I have stated that the catheter was introduced, or attempted to be so, in each case. I take this opportunity of strongly urging the propriety of a cautious examination of the urethra in every case of suspected fracture of the pelvis: next to extensive internal bleeding, the most alarming and certainly fatal occurrence, is effusion of urine. The former it may not be in our power to control or obviate, but the latter we may often prevent, and by timely assistance, save the patient. Whenever it is clearly ascertained that the urethra is ruptured, and the catheter cannot be passed into the bladder, it will be right at once to make a free incision in the perineum, and thus allow of a free exit for the urine.

It fortunately happens in many cases that the effused blood compresses the urethra and prevents the escape of the urine, and thus time is allowed for taking the necessary steps, but these should on no account be delayed.

In many doubtful cases of fracture of the pelvis, an examination with the finger per anum will enable the surgeon to detect the nature and extent of the injury.

George Street,
March 16, 1835.

ON SEROUS EFFUSION
FROM THE
MEMBRANES
AND INTO THE
VENTRICLES OF THE BRAIN,
AND
ITS CONNECTION WITH APOPLEXY
AND OTHER
DISEASES OF THE BRAIN.

BY JOHN SIMS, M.D.,

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READ APRIL 28TH, 1835.

ON dissecting the bodies of persons who have died of apoplexy, three morbid states of the brain have been more particularly noticed :—an unusually loaded state of the blood-vessels,—extravasation of blood,—effusion of serous fluid from the membranes or into the ventricles.

Several other appearances are met with, as tumours of various kinds, diseased blood-vessels, cysts containing fluids, a hard or a softened state of the brain, to which may be added hypertrophy and atrophy of the brain. Many fatal apoplectic cases are related by authors in which no change of structure in the brain, or deposit of any kind, has been noticed : the brain has in these instances appeared perfectly healthy.

Systematic authors have divided apoplexy into two species—the sanguineous and serous; and have attempted to define the peculiar and characteristic symptoms of both, and their appropriate or even opposite treatment. On the other hand, practical writers have doubted the reported frequency of serous apoplexy, or denied its existence altogether. Many cases have fallen under my observation, which appear to me to illustrate and confirm the latter opinion, and in the following paper I shall adduce numerous facts and arguments in support of this view of the subject.

Several of the older anatomists are well known to have paid considerable attention to the subject of serous effusion within the cranium, but to quote the various opinions and suppositions of medical writers on this important affection, would unnecessarily extend my communication beyond its proper limits. I shall, however, briefly advert to the views taken of it by some of the more modern British authors.

Dr. Heberden observes:—"Books do indeed make a distinction between a pituitous and sanguineous apoplexy, in the latter only of which they recommend bleeding: but this difference is *not easy to be seen*, and seems hardly ever looked for in practice."*

Dr. Cheyne, in his chapter on serous apoplexy,

* Medical Transactions of College of Physicians. Vol. I. p. 473.

after alluding to the contradictory opinions of preceding authors respecting the existence, the nature, and the treatment of this affection, states :—" I cannot hope to reconcile these opinions, after the unsuccessful efforts which have been made by physicians respected by the whole profession ; the attempt would be presumptuous ; I shall therefore steer a safe course, and content myself with a simple relation of my experience." He alludes to five instances wherein he had been called upon to explain the cause of death in persons who had died in the course of the night, and were found with pale and placid countenances. One of these only he examined. He then mentions,— " A sixth patient I attended during an illness which lasted forty hours ; and I very carefully watched the dissection. The case of this patient is a specimen of serous apoplexy, and is, I believe, the only one I ever attended." The dissection of the patient is said to resemble exactly that of one of the five bodies which he examined. I would submit that this case is more strictly referable to acute inflammation of the substance of the brain, from the history of the symptoms, and from the description of the morbid appearances. Dr. C. notes that " on the pia mater there prevailed signs of inflammation." " The substance of the brain was unusually soft." And further, from the following remark,— " In all Morgagni's dissections, under the head of serous apoplexy, there appeared venous turgescence, and effusion of serum ; and in the dissection of serous apoplexy which I directed, although the veins were not very turgid,

there was evidence of increased arterial action having existed shortly before death.”*

In the thirty-seven dissections of maniacs related by Dr. Haslam in his work on madness, there are several cases and remarks which illustrate the nature of serous effusion in the brain†.

Crowther instances a case of a furious madman, in which various signs of altered structure were present, and a greater accumulation of water than he had ever

* Cheyne on Apoplexy.—The author gives the following summary of his observations on the morbid anatomy of apoplexy.

“I have now related all the morbid appearances which I have witnessed in my dissections after apoplexy; but such a detail seldom leads to the knowledge of that peculiar condition of the organ upon which the disease may be said to depend; I shall therefore add a summary of the most important of these appearances, in what I conceive the order of their importance.

“I mention first, the remains of an excited state of the minute arteries of the brain and its membranes, this probably being the most important, as it is the most unvarying appearance; then the extravasation of blood, probably the consequence of the excited state of the blood vessels; the turgescence of the venous system; the enlargement of the ventricles, partial or general; and lastly, the serous effusion which is generally found in various parts of the brain, and which would seem to imply previous absorption of the brain.”—Cases of Apoplexy and Lethargy, 1812.

† Case 30. “A man, æt. 55: the last fortnight only his mind became violently agitated:—8 oz. fluid were taken from the ventricles.

“As the patient remained in the hospital from the middle of January to the beginning of May, in a state *perfectly tranquil*, and without the appearance of disarrangement of mind, it is improbable that a so great enlargement of the ventricles, and accu-

seen before, yet the patient had a lucid interval before death, and had no "symptoms of the hydrocephalic kind" *.

In some of the cases of chronic hydrocephalus related by Dr. Mills, it appears highly probable that the fluid had been collected for some time, and that the symptoms were not produced by its presence within the cranium †.

Dr. Cooke, in his learned history of nervous diseases, in the chapter treating of the dissections of cases of apoplexy, after reviewing the opinions of preceding writers, concludes :—" On the whole, if we admit the distinction of apoplexy into the sanguineous and serous, I think we must also admit that the serous apoplexy very seldom occurs." ‡

Dr. Bright and Dr. Abercrombie, two of the best practical authorities in this country, have devoted considerable attention to the illustration of this and other forms of cerebral disease. Dr. Bright observes : " When from any cause the balance of circulation is mulation of water, could have taken place within the short space of two weeks ; it is therefore most likely that the greatest part of this fluid had been previously collected."—*Observations on Madness, &c.* 1809.

* Remarks on Insanity. p. 26.

† On the Pathology of Hydrocephalus, in *Trans. of Dublin College of Physicians.* Vol. I. p. 352.

‡ On Nervous Disorders. Vol. I. p. 268.

destroyed, serous effusion is very apt to take place ; and from the unyielding nature of the parietes, any unusual accumulation of fluid very quickly produces manifest effects ; and a much smaller quantity of serum, if rapidly effused, will destroy life in the brain, than if in connection with any other organ or cavity. The causes which produce serous effusion are, no doubt, the same in the brain as in other parts ; but, from the circumstances I have just mentioned, they are more easily called into action, and more injurious when they exist.” *

At the conclusion of the section entitled “ Of the Cases primarily Apoplectic,” including “ Simple Apoplexy and Apoplexy with Serous Effusion,” in Dr. Abercrombie’s work on the Brain, the author infers,—“ 1st, That there is a modification of apoplexy, which is fatal, without leaving any morbid appearance that can be discovered in the brain. 2dly, There is another modification in which we find serous effusion, often in small quantity.” “ 4thly, Without any apoplectic symptoms we find serous effusion in the brain in an equal or greater degree than in the cases of the second modification ;” consequently that “ in these cases it is probable the effusion is not the cause of the symptoms.” Dr. A. states the following as the probable cause of the serous effusion :—“ That the serous effusion is to be considered as the result of that peculiar derangement of the circulation which constitutes the state of

* Hospital Reports, “ Brain.” p. 657.

simple apoplexy. In other words, it is probable that the affection which has been called serous apoplexy is to be considered as simple apoplexy terminating by effusion.* It is necessary to remark, that Dr. Abercrombie's definition of simple apoplexy is confined exclusively to those cases in which "no morbid appearance whatever can be detected after the most careful examination." His opinion, therefore, rests on the supposition of a *peculiar* derangement of the circulation in such subjects †.

Notwithstanding the preceding evidence, it is still a very prevalent opinion that if a person, rather advanced in life, fall down in a fit, and suddenly expire, or survive but a short time with coma, insensibility, stertorous breathing, &c., that if the head of such a person be examined, and effusion to any extent be found between the membranes or in the ventricles without any extravasation of blood, that death has been occasioned by what is termed serous apoplexy. This opinion, which is considered a satisfactory one, is often given to the surviving friends of a patient, and by the medical witnesses examined in cases of inquest before the coroner and other judicial tribunals. I think the following cases and observations will tend to shew that this opinion is very frequently erroneous, and that they will, on the other hand, lead to the

* Researches on the Brain, p. 217.

† Vide "A Commentary on Apoplectic and Paralytic Affections and on the Diseases connected with the subject," by Thomas Kirkland, M.D. 1792.

conclusion, that persons dying suddenly or speedily under these circumstances are more likely to have suffered an attack of simple sanguineous apoplexy, or that form of the disease in which a loaded state of the blood-vessels is discovered on dissection. Of course I exclude from consideration all other causes of death in persons who may have suffered a sudden and fatal seizure *.

My object in the present paper is strictly pathological, but the practical bearing resulting from accurate views of this subject is of the first importance.—“ In considering *these subjects*, it is necessary to discard all preconceived opinions, and to collect simply the inferences from facts.” †

I propose to relate the facts and observations con-

* Sir Henry Halford, in a paper read at the College of Physicians, Jan. 26, 1835, “ *On the Deaths of some eminent Persons of Modern Times*,” makes the following allusion to the inspection of the brain of the celebrated Dean Swift. “ In process of time there ensued that plethoric state of the brain which required frequent cupping ; and at length the obstruction became so great as to occasion an *effusion of water into the ventricles, and the loss of his faculties by apoplectic pressure*. This appeared on examination of the head after death. No doubt this effusion had been preceded by inflammation of the membranes of the brain, and by phrenzy.” Med. Gaz. Vol. XV. p. 634.

I trust a consideration of the facts and arguments contained in this paper will afford a different explanation respecting the fluid in the brain.

† Dr. Prichard on Nervous Diseases.

nected with this form of disease under the following heads :—

I. Serous effusion in the brain, or its membranes, of persons dying of various diseases not cerebral, and who had manifested no symptoms referable to the brain.

II. Serous effusion into the ventricles or membranes, to a considerable extent, in cases where old apoplectic cysts were found, with or without attendant paralysis : the patients being destroyed by diseases not cerebral.

III. Serous effusion into the ventricles or membranes of unquestionably long standing, with old apoplectic cysts : the patients being destroyed by recent extravasation of blood within the cranium.

IV. Cases of simple sanguineous apoplexy.

V. Cases of serous effusion into the membranes or ventricles of old standing, with loaded, dilated, or diseased blood-vessels, frequently denominated serous apoplexy, but more properly referable to simple sanguineous apoplexy.

I.

“Serous effusion in the brain or its membranes in persons dying of various diseases not cerebral, and who manifested no symptoms referable to the brain.”

The very great frequency of collections of serous fluid found in the ventricles or membranes of the brain, in cases where no cerebral symptoms were known to have existed, is a subject of great importance to pathologists and practical physicians, especially when viewed in reference to the discrimination and curative treatment of apoplexy and other diseases of the nervous system. There is also a great variety of other morbid appearances found on dissection of the brain, in cases where no symptoms, or no symptoms adequate to explain the phenomena, were noticed during life.

With the view of attempting to illustrate this subject, I have put together, in a tabular form, a number of dissections of persons who were destroyed by various forms of disease in the thorax and abdomen, in whom what are generally considered morbid alterations were also discovered in the brain or its membranes.

From this Table, which is taken from a great variety of cases of all ages and various diseases, I have excluded all those in which coma, convulsions, or any other known sign of cerebral disease occurred during life.

TABLE I.

Containing fifty cases of persons who died of various diseases, not cerebral, and who manifested no symptoms referable to the brain, but on dissection effusion of fluid and other morbid appearances were found in the brain or membranes.

No.	Sex	Age	Disease causing death.	Effusion.		Other morbid states of the brain.
				Membranes.	Ventricles.	
1.	M.	66	Purpurahæmorrhagica.	Great quantity.	3 oz.	Part of the surface of posterior and middle lobe of right hemisphere fawn coloured.
2.	M.	50	Phthisis pulmonalis.	Extensive sub-arachnoid.	Much	Two small tubercles in one of the intergyral spaces.
3.	F.	53	Cholera . . . . .	. . . . .	. . . . .	Cranium loaded with blood. Blood-vessels of brain highly congested.
4.	F.	55	Diseased heart.	. . . . .	4 oz.	High congestion of skull, membranes, and brain. Velum interpositum opaque.
5.	M.	43	Fungoid disease of heart and lungs.	Great quantity.	. . . . .	Tunica arachnoidea white and universally opaque.
6.	F.	35	Hypertrophy of heart.	Fluid separating the convolutions.	Small quantity.	
7.	F.	29	Phthisis pulmonalis.	Fluid in sub-arachnoid tissue.	Some.	
8.	F.	11	Pneumonia . . . . .	. . . . .	Fluid in ventricles.	Opacity of arachnoid and velum interpositum. Blood-vessels turgid.
9.	M.	4	Pleuro - peripneumonia.	Much in sub-arachnoid tissue.		
10.	F.	28	Puerperal peritonitis.	Some effusion.	Some	Brain bloodless.
11.	F.	2	Pneumonia	Much beneath arachnoid.	6 oz.	Fluid remarkably clear.
12.	M.	74	Diseased heart.	Great effusion.	. . . . .	Blood-vessels congested. Arteries at base tortuous and ossified.
13.	M.	56	Diseased heart.	Fluid	4 oz.	Hypertrophy of frontal bones. Tunica arachnoidea thick and opaque. Arteries ossified.
14.	M.	56	Phthisis. Fungoid disease of kidney.	Effusion	Effusion.	
15.	F.	20	Disease of various organs.	Much fluid . . . . .	. . . . .	Opacity of arachnoid. Distinct plugs of coagulable lymph in longitudinal and lateral sinuses.
16.	M.	54	Fungus hæmat. of kidney.	Very great quantity.	. . . . .	Large quantity of fluid left in base of skull.
17.	F.	24	Crural phlebitis.	Effusion on surface.	. . . . .	Brain bloodless.
18.	F.	22	Abscess of liver. Peritonitis.	Fluid between membranes.		
19.	M.	50	Phthisis pulmonalis.	Much fluid . . . . .	. . . . .	Great congestion of blood-vessels.
20.	F.	76	Diseased heart. Hydrothorax.	Great effusion.	. . . . .	Blood-vessels all turgid. Brain red-brown, from great quantity of blood.
21.	M.	75	Slough on sacrum, great emaciation.	Great quantity.	. . . . .	Opacity of arachnoid. Brain tough, fibrous.
22.	M.	67	Diseased heart.	Effusion . . . . .	. . . . .	Opacity of membranes.
23.	F.	23	Phthisis pulmonalis.	Very great quantity.		
24.	M.	69	Phthisis pulmonalis.	Much fluid in tissue.	And in ventricles.	Membranes opaque and tough. Fornix softened. Septum l. absorbed. Basiliary artery dilated; tortuous.
25.	M.	84	Diseased bladder.	Great quantity.	Great quantity.	
26.	F.	50	Ulceration of intestine.	. . . . .	. . . . .	Arachnoid of dura mater very thick and dusky red colour. Lining membrane of ventricles granular and rough.
27.	F.	22	Phthisis pulmonalis.	Fluid . . . . .	. . . . .	Opaque membranes. Tubercle on dura mater size of a pea.

No.	Sex	Age	Disease causing death.	Effusion.		Other morbid states of the brain.
				Membranes.	Ventricles.	
28.	F.	53	Abscess of thigh and pelvis.	Large quantity.	. . . . .	General opacity of arachnoid.
29.	F.	57	Diseased heart. Ulceration of intestines.	Large quantity.		
30.	M.	64	Cancer of stomach and liver.	Much fluid. . .	6 oz.	Blood-vessels tortuous; congested. Septum lucidum broken.
31.	M.	40	Phthisis pulmo.	. . . . .	Great quantity.	Arachnoid cloudy.
32.	F.	36	Phthisis pulmonalis.	. . . . .	Great quantity.	
33.	M.	10	Phthisis pulmonalis.	Some	Some	Blood-vessels gorged. Arachnoid opaque.
34.	M.	39	Phthisis pulmonalis.	. . . . .	Large quantity.	Membranes thick and opaque.
35.	M.	60	Phthisis pulmonalis.	. . . . .	Great quantity.	Opacity of arachnoid.
36.	M.	8	Diseased joints.	Great quantity.	2 oz.	
37.	F.	25	Phthisis pulmonalis.	Very great quantity.	4 oz.	Arachnoid opaque.
38.	F.	80	Phthisis pulmonalis.	Large quantity.	4 oz.	
39.	F.	66	Cancer of stomach.	Large quantity.	. . . . .	Blood-vessels gorged.
40.	M.	63	Inflammation of pleura, peritoneum, &c.	. . . . .	. . . . .	Blood-vessels gorged. Great milkiness and thickening of arachnoid.
41.	F.	69	Cancer of liver.	. . . . .	. . . . .	False membrane in the cavity of arachnoid. Dense deposit along longitudinal sinus; membrane tinged with bile.
42.	M.	47	Diseased liver.	Much fluid . .	. . . . .	Thickening of membranes.
43.	F.	64	Scirrhus rectum.	. . . . .	. . . . .	Fibrous tumour size of an almond, resting on left anterior clypeal process.
44.	F.	49	Scirrhus pylorus.	. . . . .	. . . . .	Recent arachnitis. Layer of lymph. Thick deposit along longitudinal sinus; tinged with bile.
45.	M.	60	Phthisis. Ulceration of intest.	Very great quantity.	6 oz.	Septum transparent and perforated; arachnoid thick and opaque.
46.	F.	6	Phthisis pulmo.	Large quantity.	Very great . .	Cranium deep blue.
47.	M.	60	Carditis . . .	. . . . .	. . . . .	In the cut surface, holes like new bread. Excavation in corpus callosum.
48.	F.	57	Carcinoma of breast, &c.	Much fluid . .	Much fluid . .	Skull softened and a layer of bone on arachnoid. Blood vessels much loaded.
49.	M.	32	Diseased heart, axillary aneurism.	. . . . .	Much fluid . .	Infiltration of substance. Membranes opaque.
50.	M.	44	Phthisis pulmonalis.	Effusion . . .	. . . . .	Opacity of velum interpositum. A vascular spot on the pons varolii.

In this Table, effusion of serous fluid into the cavity of the arachnoid, or the sub-arachnoid tissue, or both, was observed in considerable quantity in nearly all the cases: in many of them several ounces were found in the ventricles.

A loaded or a diseased state of the blood-vessels—opacity and thickening of the membranes—with other morbid states, were noticed in many of the cases.

The respective ages of the subjects were as follows:—

TABLE II.

Under 10 years . . .	in 4 cases.
Between 10 years and 20 years,	2
20 . . . 30 . . .	8
30 . . . 40 . . .	4
40 . . . 50 . . .	5
50 . . . 60 . . .	12
60 . . . 70 . . .	10
Upwards of 70	5

It appears that between the ages of 50 and 70 nearly one half of the cases occurred.

TABLE III.

Of the diseases which occasioned death, there were of—

Phthisis pulmonalis . . .	16 cases.
Disease of the heart . . .	8
Purpura hæmorrhagica . . .	1
Cholera	1
Carcinoma and fungoid disease of stomach, liver, kidney, &c. . . }	9
Pneumonia	3
Peritonitis	2
Phlebitis	1
Crural phlebitis	1
Inflammation of liver and peritoneum	1
Mortification	1

Diseased bladder	.	.	.	1 case.
Ulceration of intestines	.	.	.	3
Internal abscess	.	.	.	1
Scrofulous joints	.	.	.	1

The proportion of cases of pulmonary tubercles, amounting to sixteen, is not greater than the ordinary comparative mortality from this disease; the cases of death from disease of the heart amount to eight.

When effusion of serous fluid has been noticed in the brain of persons dying of diseases of the thorax, it has generally been explained to arise from the obstruction to the free return of blood from the head in such patients. This explanation may apply to diseases of the heart in some instances, but it is very far from being capable of universal application. Besides, any one accustomed to pathological investigations must have observed how very frequently (more especially in the latter periods of life) disease exists in the muscular structure of the heart, and in the mitral and tricuspid valves, without having produced any notable inconvenience, and very frequently without having been discovered during life: it would therefore appear that human life is not shortened, in many instances, by very extensively diseased states of the heart. The explanation which has often been given respecting fluids found in the brain of phthisical subjects, viz., that it is part of the general wasting of the solids in this disorder, is more satisfactory than that of impeded

return of blood from the head. The analogy holds with other diseases attended with extreme emaciation, as carcinoma ventriculi, of which there are three cases in the preceding Table.

II.

“Serous effusion into the ventricles or membranes to a considerable extent, in cases where old apoplectic cysts were found, with or without attendant paralysis, the patients being destroyed by diseases not cerebral.”

CASE I.

Copious Effusion into the Ventricles; an Apoplectic Cavity in the right hemisphere filled with Serum. Death from Disease of the lungs.

Feb. 21, 1833. Ann Sheppard, æt. 48. She has had hemiplegia of the left side three years. She was admitted a month ago with aggravation of habitual cough and anasarca of the legs, resulting from diseased heart and lungs. She is an old gin-drinker. Died from increase of pulmonary disease.

Inspection 41 hours after death.—Head. On removing the calvaria, the dura mater fell in upon the right hemisphere, and a large quantity of fluid escaped from an opening made by the saw; more than half of the substance of the right hemisphere was found to be wanting, and its place occupied by fluid covered by membrane; the brain forming the

walls of the cavity was fawn coloured, and soft like jelly. The blood-vessels traversing the membranes in this direction were much enlarged and tortuous. But little cerebral substance was interposed between the ventricle and the apoplectic cavity. Nearly the whole of the septum lucidum was of a transparent fawn colour. Right ventricle very large; the part of its lining membrane adjacent to the cyst, thick and gelatinous. The pia mater and arachnoid forming the walls of the pouch were much thickened and opaque. Both the corpora striata stained as from imbibition. The substance of the left hemisphere and the cerebellum were healthy.

Thorax, heart.—Both auricles dilated. Right auriculo-ventricular opening dilated. Cartilaginous deposit on the tricuspid valve. Left auriculo-ventricular valve contracted; deposit of bone around the mitral valve.

Lungs infiltrated with sero-purulent fluid, and hepatized to a very great extent.

Abdomen.—The liver presented the fatty degeneration. A large fibrous tumour was found in the substance of the uterus.

Remarks.—In this case of old apoplexy, a large quantity of fluid was found in the ventricles, more especially in the right, which had most probably been gradually accumulating, and without any marked

variation of symptoms. It is also remarkable for shewing the atrophy of one hemisphere of the brain subsequent to the attack of apoplexy, and the consequent supply of the place of the brain by serous effusion.

CASE II.

Extensive Effusion into the Membranes; a small Tumour in the right Corpus Striatum; a cavity in the right Thalamus. Death occasioned by Intestinal Disorder.

Ann Parr, æt. 78, has been in the paralytic ward 12 months. She has hemiplegia of the left side. Some time ago, she suffered an attack of diarrhœa, attended with dysenteric symptoms.

Inspection 34 hours after death. Dec. 18, 1833.—Head. Slight opacity of the membranes. A very large quantity of fluid was effused into the sub-arachnoid tissue: about half an ounce was contained between two of the convolutions on the posterior lobe of the left hemisphere. In the centre of the right corpus striatum was found a small hard body of the size of a pea, of irregular shape. A small cavity in the right thalamus. Both the thalami were diminished in size.

Thorax, heart.—Mitral and aortic valves thickened; aorta dilated.

Lungs speckled with opaque semi-cartilaginous deposits on the pleura.

Abdomen.—An appearance of healed ulcers in several parts of the large intestines.

Remarks.—This patient sank exhausted from the disease of the intestines, without any increase of head-symptoms. It is an instance of very copious effusion of serous fluid into the sub-arachnoid tissue, connected with an apoplectic cavity in the right thalamus, and absorption of both these bodies.

CASE III.

An old Apoplectic Cyst with dilated Ventricles and copious Effusion of Serous Fluid. Death occasioned by Sloughs on the back.

Sarah Collins, æt. 67 years. Was bed-ridden for a great length of time, and died from exhaustion occasioned by sloughs on the sacrum.

Inspection 42 hours after death. Dec. 10th, 1834.—Head. The membranes were very much thickened, with a large quantity of fluid beneath the arachnoid. The lateral ventricles were dilated so as to contain 4 oz. each. The septum lucidum was very thin, but entire. The brain, fibrous and loose, as if from interstitial absorption. There was an old brown coloured cyst in the posterior lobe of the left hemisphere.

Thorax, heart.—The aorta and its valves, as well as the coronary arteries were ossified. Lungs hepaticized.

Remarks.—In this case the quantity of fluid accumulated in the ventricles, amounting to eight ounces, together with that abundantly effused from the membranes, had in all probability been slowly collecting for a considerable time past: the septum lucidum, though very thin, was entire, which is an evidence of the gradual deposition of fluid within the ventricles. The fibrous and loose texture of the brain is connected with the pathological condition which has been termed *oedema cerebri*.

CASE IV.

Copious Effusion into the Membranes and Ventricles; an old Apoplectic Cyst. Red ramollissement of the gray matter.

Elizabeth Lay, æt. 67 years, was admitted in a dying state, comatose. Has been bed-ridden with left hemiplegia for many years.

Inspection 19 hours after death. Jan. 24, 1835.—There was a large quantity of fluid in the membranes and in the ventricles. Ramollissement with interstitial effusion of blood, was observed on several spots of the gray matter on the posterior lobes of the cerebrum. There was an old cyst in

the right corpus striatum, partly involving the thalamus of the same side.—This case differs from the three preceding in consequence of the existence of a small portion of recent red ramollissement of the gray matter of the posterior lobes of the cerebrum, and the coma as a symptom. It may be considered as somewhat out of place here, but I have introduced it as an instance of long existing effusion connected with an old apoplectic deposit, the ramollissement most probably having occurred a few days before death.

III.

“Serous effusion into the ventricles or membranes of unquestionably long standing, and old apoplectic cysts, with recent extravasation of blood, which speedily destroyed life.”

CASE V.

An old Apoplectic Cyst in the Right Corpus Striatum; smaller cavities in other parts of the Brain; Hemiplegia with signs of recent Arachnitis, and Extravasation into the cavity of the Arachnoid.

Sarah Carrol, æt. 54, has had hemiplegia of the left side from an attack which occurred 18 months ago. She has been delirious for the last two weeks, almost incessantly screaming, and continually repeating her words. Pulse small, but always sharp and thrilling.

Inspection. Nov. 11th, 1833. Fifty hours after death. Head.—There was considerable effusion of serous fluid between the arachnoid and pia mater, but not so much as in many similar cases. The arachnoid had throughout a milky appearance. The remains of an old apoplectic extravasation lined with fawn-coloured matter was found in the centre of the right corpus striatum; there were several smaller cavities in different parts of the brain, lined by membrane, and containing fluid. A small layer of recently coagulated blood was found in the cavity of the arachnoid, upon the outer and posterior surface of the right hemisphere.

Remarks.—It is most probable that the effusion into the membranes was of old standing, from the opaque state of the arachnoid, together with the other morbid appearances noticed; and that the layer of extravasated blood, with the recent arachnitis, was the cause of death. The numerous small cavities in the brain I shall, in a succeeding paper, endeavour to point out as an evidence of white ramollissement having existed at some former period.

CASE VI.

Ancient Serous Effusion into the Membranes and Ventricles; recent Extravasation into the Ventricles. Death in 80 hours.

Ann Baggs, æt. 71. She was suddenly attacked

with apoplexy on the evening of Nov. 22, attended with paralysis of the left side. She lived eighty hours after the seizure, but the whole of the time was, apparently, in a moribund state.

Inspection 32 hours after death. Nov. 27th. On raising the skull-cup, the dura mater appeared turgid and tense. There was considerable effusion of serum between the membranes, with slight opacity; two convolutions posteriorly were separated from each other half an inch, by the presence of a large quantity of fluid. On separating the hemispheres, the corpus callosum was evidently raised by fluid beneath, so as to make its distance from the surface inconsiderable. The ventricles were very large, and *had evidently contained for some time past from six to eight ounces of fluid.* They were distended with bloody serum, which, when removed, left a coagulum of blood lying loosely on the floor of both lateral ventricles. A rupture of a blood-vessel had taken place in the right thalamus, which was completely broken up and mixed with coagula; from this rupture the blood had passed through the septum lucidum, which had completely given way into the left ventricle, and also to the fourth ventricle, and to the surface of the cerebellum.

Thorax and abdomen not examined.

Remarks.—From the long continued dilated state of the ventricles, and the serous fluid in them as well

as between the membranes, this case might have been considered a decided one of serous apoplexy, provided the patient had died rather suddenly, and no other morbid appearance had been detected in the brain or in any other organ. Whereas the case not only shews that life may go on without much inconvenience with the presence of a large quantity of fluid in the brain, but it also shews that the ventricles, being thus habituated to distension by fluid, were rendered less susceptible of the presence of extravasated blood in them, and consequently life was protracted longer than it otherwise would have been; for whenever blood is extravasated into the ventricles, death takes place, if not instantly, at least very speedily, and probably next in point of rapidity to extravasation into the tuber annulare.

CASE VII.

Fluid in the Membranes and Ventricles; an old Cyst; Holes in the right thalamus; and a recent Clot in the left thalamus.

William Tuttill, æt. 80. He had an apoplectic attack about eighteen months ago, attended with hemiplegia of the left side, from which he appeared to have recovered. He was admitted into the work-house in nearly a dying condition, with muttering delirium, impeded articulation, and paralysis of one side of the face. He died a few days after admission.

Inspection 38 hours after death. Head.—There was considerable opacity of the arachnoid, not uniform, but in spots. A large quantity of fluid was found between the membranes, and the blood-vessels were highly congested. The ventricles contained a large quantity of fluid; the right was larger than the left, and the floor of it softened. An old cyst, the size of a marble, with dark brown parietes, was observed in the substance of the right corpus striatum, and one or two very small colourless cavities in the thalamus of the same side. In the centre of the left thalamus there was a small clot of recently extravasated blood, the size of a pea, and of very dark colour; the fibres of the pons varolii and medulla oblongata were very strongly marked. Many vesicles were noticed on the plexus choroides.

Thorax.—Tubercles were found in the lungs. The heart large, its cavities dilated. Ossification of the aortic and mitral valves.

Abdomen.—Liver dark coloured, loaded with blood. Stomach very much contracted.

Remarks.—In this case death was occasioned by the small extravasation of blood in the left thalamus, and probably the symptoms during his last illness were partly referable to arachnitis, and to this cause may also be attributed some portion of the fluid effused. It is also worthy of notice, in consequence of the disappearance of the left hemiplegia and its

connection with the traces of arrested ramollissement in the right thalamus.

CASE VIII.

Old serous Effusion between the Membranes and in the Ventricles. Death from copious Extravasation, which was prevented from entering the ventricle by its tough lining membrane.

Mary Cornwall, æt. 60. Has been a cook, she is a very large woman. Whilst standing at the wash-tub she was suddenly seized with an apoplectic fit, Jan 7th. She was partially sensible, with left hemiplegia. On her admission on the 8th, she was in a nearly hopeless condition; she however rallied a little on the 10th, and died on the 12th. Pupils were firmly contracted from the time of her admission.

Inspection 55 hours after death.—Head. Spots of extravasated blood were observed beneath the arachnoid coat: considerable opacity and effusion between the membranes: ventricles dilated. A large clot of blood was found in the substance of the right thalamus, which was prevented from entering the ventricle by a membrane which was seen beautifully distended, and which, from its toughness, prevented the entrance of the blood from the thalamus into the ventricle. The blood had made its way down by the side of the crus cerebri, and extended beneath the

opposite thalamus. On making a section into the substance of the brain above the clot in the thalamus, interstitial extravasation of blood had taken place.

Thorax.—Heart large, mitral valve rough.

Remarks.—Among the signs which distinguish ancient from recent effusion into the ventricles, I believe the entire and extended state of the septum lucidum, and the thickened state of the lining membranes of the ventricles, may be considered as strikingly marking the first; and a torn state of the septum, and softening of the central cerebral matter, with a natural or a thin state of the lining membrane, as denoting the latter. In this case, the lining membrane was so tough as to admit of distension, and to prevent the entrance of blood into the ventricle, the course the blood would in all probability have taken, in preference to passing along the crus cerebri and insinuating itself beneath the opposite thalamus.

CASE IX.

Effusion into the Ventricles and beneath the Membranes: old Apoplexy; recent interstitial Extravasation with ramollissement.

Henry Stock, æt. 70. Admitted March 28th, with stertorous breathing: he appeared nearly insensible, but still could answer questions when roused.

He had some time ago an attack of apoplexy, to which succeeded hemiplegia of the left side. His pulse was large and full, but was very soon influenced by depletion. He died about three days after admission.

Inspection. April 1st. Brain.—The membranes were distended with an unusual quantity of opaque serum, in some parts in the form of small bladders. The ventricles contained much fluid. On the surface of the right hemisphere were several fawn-coloured spots: towards the centre, and contiguous to an old cyst in the right corpus striatum, the cerebral substance was softened. The corpus striatum had almost disappeared by absorption, its place being occupied by filamentous tissue and fawn-coloured fluid. The lining membrane of the ventricle was seen stretched across this old cyst. There was ramollissement of the left corpus striatum, with interstitial extravasation of blood, which was probably the cause of the fatal attack.

Remarks.—In this case the brain appears to have sustained very great injury at the time of the first apoplectic attack: there was probably a large clot, attended with ramollissement of the surrounding parts of the brain. The wasted state of the right corpus striatum, with the fawn-coloured spots on its surface, are evidence of this softening having been arrested or cured. There appears to have been

a tendency in this man's brain towards the state of ramollissement, for the fatal extravasation took place into a softened part of the left corpus striatum.

CASE X.

A Maniac with Amaurosis: extensive Effusion beneath the Membranes and into the Ventricles; Death from Extravasation of blood into the cavity of the Arachnoid.

Thomas Dalton, æt. 50, six feet high, has amaurosis of both eyes, which is reported to be consequent on purulent ophthalmia. He was admitted into the insane ward about three weeks ago. During the first part of the time he was quiet, but latterly he was occasionally boisterous and required restraint. Early in the morning of the 7th instant, one of the medical assistants was called up to him, who found that he had suffered an apoplectic seizure. Signs of approaching dissolution soon came on, he however rallied a little, and lived about thirty hours after the attack.

Inspection 25 hours after death. Nov. 9th, 1833.
Brain.—A large quantity of fluid was discovered between the membranes, and also in the ventricles. Nearly the whole of the arachnoid lining the dura mater on the left side was covered with a layer of coagulated blood, and in a slight degree also on the right side: the layer was thicker at the posterior part

of both hemispheres. One of the large veins of the pia mater was distinctly observed to have been ruptured. The vessels of the pia mater and the substance of the brain were unusually loaded with blood. The substance of the brain, particularly the gray matter, was remarkably hard, resembling soft cartilage to the knife. The optic nerves throughout their course appeared like flattened cords of filamentous tissue, without any of the ordinary substance of a nerve. The corpora quadrigemina were remarkably diminished in size.

Thorax.—Heart; globular hypertrophy of the left ventricle, but to a very small extent.

Remarks.—The history of this patient, together with the appearances presented on dissecting the brain, shew that the fluid between the membranes and in the ventricles had long existed. The hardened state of the cerebrum has occasionally been noticed in the brains of maniacs. The patient lived longer than is usual with extensive extravasation on the surface: this may probably be accounted for by the arachnoid and surface of the brain being long accustomed to the morbid presence of serous fluid, that they were consequently rendered less impatient of the blood extravasated from the rupture of the pia matral vein. The dwindled state of the optic nerves has been usually observed in cases where the eye-ball has long been useless.

IV.

Simple Sanguineous Apoplexy.

The following examples of simple sanguineous apoplexy, tend to illustrate the anatomy of those cases which have been denominated serous apoplexy.

Although the terms congestion, vascular fulness, loaded state of the blood-vessels, hyperemia, are so frequently and familiarly applied to denote a pathological condition of the brain, yet some authors have denied the possibility of this circumstance occurring within the cranium, because they are unable satisfactorily to account for such a state of the brain. It is sufficient for my purpose, to allude to some of the phenomena on which the affirmative of this question is grounded, without entering on its discussion*. We frequently observe the skull to be nearly white, at other times it presents a mottled or deep purple colour, and this occurs in persons of all ages. Compared with the ordinary fulness of the brain, we frequently observe a general bright red colour of more or less intensity, and in some of the sections made by the knife it has a beautifully mottled appearance, resembling a minute injection of the capillary arteries

* See two papers by Dr. Kelly in the 1st vol. of the Edinburgh Medical and Chirurgical Transactions, Dr. Abercrombie's work, and others. An Experimental Investigation of the Effects of Loss of Blood. By Dr. Marshall Hall. Med. Chir. Trans. Vol. XVII.

and veins. The veins of the pia mater and plexus choroides, and the whole substance of the brain, are often seen gorged with deep purple blood, of which the brain of a cholera patient is a striking instance. In a brain not loaded with blood, the vessels on the surface and in the central parts are in some cases remarkably dilated, and also when there appears no disease of the coats of the vessels. An objection is generally urged, that from the appearance of paleness or congestion in the dead brain, where the circulation is finally stopped either slowly or suddenly, we cannot infer that similar phenomena occurred in the living brain, when the circulation existed. If this argument be carried out, it will equally apply to the vascular system in every other tissue or organ of the body. It has often been remarked, that the appearance of cerebral congestion is influenced by the thorax being first opened, and the great vessels of the neck being divided, or otherwise: I have often made observations on this point and not found it so; indeed, for obvious reasons, it is impossible in the majority of cases.

It is highly probable, that a form of simple sanguineous apoplexy frequently takes place in the convulsions of children. The brain of infants presents a more uniformly deep red tinge throughout than the brain of those more advanced in life. The texture of the brain at this age is so tender, that it allows of a more free dilatation of the numerous blood-vessels ramifying

in it, and the consequent congestion of blood in them, when exerted by any unusual impression or irritation; and hence may arise the greater frequency of convulsions or simple sanguineous apoplexy in infants, compared with analogous affections in adults.

CASE XI.

Convulsions in a Child; Death in the first fit; high Congestion in the brain.

I was asked to visit the child of a person in my neighbourhood, said to be suffering a severe convulsion fit of longer than usual duration. The child had just died on my arrival. It was eleven months old, and was under treatment for some ailment connected with its teeth. This was the only fit the child had suffered.

Inspection.—On examining the head, the dura mater was found highly red. The vessels of the pia mater and those distributed in the substance of the brain were gorged with blood. The plexus choroides was highly vascular and of a livid colour. Some of the veins entering the longitudinal sinus were loaded with blood.

The next case occurred in an older child, and in this instance, the apoplectic state was more completely shewn by the symptoms.

CASE XII.

Convulsion; simple Sanguineous Apoplexy in a child; extreme Injection of the Blood-vessels.

John Jones, æt. 6 years, became dull and stupid, and could not raise himself in bed; he appeared to have lost all power over the muscles of his extremities. Pupils dilated. He had an attack of convulsions on the 7th of March, and a complete apoplectic seizure the evening before his death.

Inspection, March 12, 1834, 17 hours after death. Brain.—The blood-vessels, membranes, and substance of the brain exhibited extreme congestion throughout. The blood-vessels of the pia mater were beautifully and finely injected. The substance of the brain and medulla oblongata was very firm. Weight 2 lb. 11 oz.

Thorax.—Lungs; hepatization of inferior part of left lung to some extent and of long standing.

Abdomen.—Stomach distended; mucous membrane soft, mesenteric glands enlarged.

Remarks.—In the first of the two preceding cases, the loaded state of the blood-vessels of the brain existed in a very remarkable degree. The brain of an infant dying in comparatively good condition, is generally in a state of congestion, but the appear-

ance is very different from that which I have just related. In the second case, No. XII., the symptoms and appearances on dissection exactly corresponded with sanguineous apoplexy in an adult.

A few days ago I was called to see the following case, which appears strikingly to illustrate this view of the pathology of convulsive disease in children.

CASE XIII.

Long continued Convulsion; Paralysis; recovery.

Aug. 11th. A child, aged 2 years, was suddenly seized with strong convulsion, about two p.m., in which she continued for nearly one hour and a half. No teeth were pressing, the gums had been freely lanced several times. The weather was very hot, which, with disordered stomach in a rather delicate child, might produce the fit. In about half an hour from the commencement the spasms abated, and it appeared going off: agitation of the left extremities was again observed to increase, and the symptoms returned in all their violence. Local bleeding, warm bath, cold to the head, purgatives, injections were assiduously persevered in, which happily succeeded. The convulsion ceased and the child fell asleep. *Nine*, p.m. Has slept several hours; is sensible; she does not move the left lower extremity, nor flinch on its being pinched; there is rigid contraction of the left arm. Lecches to the right side of the head; blister

to the back of the neck ; calomel. 12th. Slept well ; sensibility and power over the left side restored ; no other symptoms appear. 13th. Recovered.

CASE XIV.

Simple Sanguineous Apoplexy ; extreme Congestion in the brain and in the lungs.

A. B., æt. 23 years, a stout muscular young man, six feet two inches high, very short neck, accustomed to high living, whilst reading was suddenly seized with apoplexy. He screamed out immediately on the attack and sunk into a state of insensibility, from which he was never roused. He died in the course of a few hours.

Inspection. — Head. Scalp highly congested. Skull purple, mottled with blood. Brain: the dura mater adhered to the bone, and the superior part came off with the calvaria. There was slight serous effusion in the sub-arachnoid tissue over a few of the intergyral spaces. The blood-vessels throughout the membranes and the substance of the brain were gorged with blood ; a large quantity of blood flowed from the incisions made into the sinuses. No extravasation could be detected. There was a small quantity of fluid in the ventricles, and the central parts of the brain were rather soft.

Thorax.—Heart rather large, but natural in struc-

ture. The lungs were loaded with blood posteriorly. A large quantity of fluid blood was found in the trachea and ramifications of the bronchi. No laceration of the texture of the lungs or of any blood-vessel could be detected. The capacity of the thorax appeared to be encroached upon by the liver.

Abdomen.—Stomach contracted and rugous, the mucous membrane vascular. The liver was more than twice the natural size, in part from congestion, without any apparent change of texture.

Remarks.—This case presents a striking example of simple sanguineous apoplexy of the most severe character. No extravasation could be traced on the most minute examination of the brain. The congestion in the lungs was extreme, and it is highly probable that some part of the blood found in the air passages had transuded from the air-cells or the more delicate ramifications of the bronchi.

CASE XV.

Simple Sanguineous Apoplexy; Paralysis of the face; loaded state of blood-vessels; slight Serous Effusion.

Rachel Batts, æt. 60 years, went to bed as well as usual, and on Feb. 1st, after sleeping several hours, she awoke in a stupid state. When brought into the infirmary, the pupils were contracted almost to a

pin-point aperture. She was partly conscious, and put out her tongue, when asked to do so, which was drawn to the left side. The right side of the face was paralysed, and the left corner of the mouth drawn down. She lived about three days.

Inspection 14 hours after death.—Head. The cranium was largely developed in the superior and lateral portions. Deep cribriform pits along the tract of the great meningeal artery on the parietal bones. Brain: the blood-vessels were throughout highly loaded with blood, but without any extravasation. There was some serous effusion between the membranes and in the ventricles, but in very small quantity. The brain was firm, and weighed 3 lb. 2 oz.

Remarks.—This is evidently a case of simple sanguineous apoplexy, occasioned by the loaded state of the blood-vessels of the brain. The quantity of serous fluid found between the membranes and in the ventricles will not account for the death of the patient on the principle of serous apoplexy. The brain was heavy; and it not unfrequently happens that the weight of the brain is increased in proportion to the quantity of blood which the distended vessels appear to contain. In a man, æt. 35 years, who died from extensive pleuro-peripneumonia, attended with delirium before death, the brain was found highly loaded with blood, and weighed 3 lb. 6 oz. Numerous instances illustrative of this point will be found in a succeeding paper on hypertrophy of the brain.

CASE XVI.

Simple Sanguineous Apoplexy; excessive venous Congestion in the Brain; dilated left Ventricle of the heart and diseased Mitral Valve.

Isabel Harding, æt. 45 years, a person of weak intellect, but of a strong and robust habit of body. Having made no complaint during the day, she was suddenly seized with apoplexy after supper in the evening. She had strong convulsions, her head was drawn firmly to the left side, and both the left extremities were in a state of rigid spasm; foaming at the mouth; laborious breathing. She was perfectly insensible. Pulse large and full. She was bled copiously from the arm and temporal artery, was cupped, blistered, and took calomel. Her pulse fell on the 18th, with a partial return of consciousness. On the 19th she was much worse; extreme debility with coma. She died on the 22d.

Inspection 36 hours after death.—Brain. Old opacity of the membranes was observed with the usual effusion beneath. There was very great venous congestion throughout, and in all other respects the brain was healthy, without any trace of lesion or extravasation. The brain was moderately firm, and weighed 3 lbs.

Thorax.—Heart: left ventricle much dilated, the mitral valve rugged, with thickened chordæ tendineæ.

Portions of the lungs hepatized of some duration.
Bronchial membrane injected and thickened.

Abdomen.—Mucous membrane of stomach softened and lacerable; liver soft; congestion in the portal system.

Remark.—This case is an instance of sudden apoplectic seizure attended with insensibility and spastic contraction of one half of the body, and on dissection we find the brain excessively loaded with blood.

In the preceding part of this paper, numerous facts have been produced to shew that serous fluid exists in very many instances in the brain of persons who died of diseases not cerebral, and who manifested no symptoms of effusion; that fluid is often effused in great quantity in the membranes and ventricles of those persons who have previously suffered apoplexy with extravasation of blood; and that some of these persons live to the ordinary period of human life, being carried off by various disorders, and that others are destroyed by subsequent extravasation of blood in the brain. I then detailed several striking instances of simple sanguineous apoplexy occurring in persons of various ages. Having taken these preliminary steps, which form the ground work of the argument, we shall be better able to appreciate those cases related in the next section, which have been termed serous apoplexy, and to appro-

priate them to their proper place in the class of diseases of the nervous system.

V.

“ Cases of serous effusion into the ventricles or membranes of old standing, with loaded, dilated, or diseased blood-vessels, frequently termed serous apoplexy, but more probably referable to simple sanguineous apoplexy.”

CASE XVII.

Copious effusions of Serous Fluid into the Ventricles ; dilated Blood-vessels ; small cavities filled with Serum in the Thalami.

William Miller, æt. 55. Paralytic and half-idiotic for many years. On Feb. 24th, in the evening, he suddenly cried out and was seized with strong convulsions resembling epilepsy. The left side was paralysed ; the right side of the face and right extremities were strongly convulsed. His pupils were dilated and insensible to light. The eyes drawn towards the right side. Insensible to pinching. Pulse full and bounding. He was bled twice and cupped, but his symptoms continued to increase ; he had occasional convulsions, became comatose, and died two days after the attack.

Inspection 14 hours after death.—Head. On removing the dura mater the surface below was strik-

ingly marked by the fibrous lines of the dura mater. The contiguous portions of the arachnoid of the two hemispheres of the cerebrum adhered intimately where they touch below the falx. The blood-vessels of the brain were large and dilated. The convolutions flattened. The substance of the brain was remarkably tough, particularly near the ventricles. All the ventricles were dilated, and might contain about eight ounces of fluid. The corpora striata were atrophied, and contained numerous small cavities filled with serum. Weight 2 lbs. 13 oz.

Heart.—Hypertrophy of left ventricle, both auricles dilated. Diseased valves. Old pleuritic adhesions.

Kidneys* granular; a cyst on one the size of a walnut.

Remarks.—The unusual firmness of the substance of the brain, particularly near the ventricles, renders it probable that the fluid had been effused into the ventricles a long time back: from this appearance, and from the atrophy of the corpora striata, and the vesicles contained in these bodies, together with the history of the case, I suppose the patient had been the subject of ramollissement of the central part of the brain at some former period of his life. The character of the fatal attack, and the flattened appearance

* See notice of a paper "On Fits and Sudden Death, in connection with Diseases of the Kidneys, by James A. Wilson, M.D." Medical Gazette, Vol. XI., p. 777.

of the convolutions, indicate pressure from some cause or other ; and I think, taking all the circumstances into consideration, it is quite as probable that it was occasioned by congestion in the dilated blood-vessels, as to suppose that it arose from the serous fluid in the ventricles, which I before stated had, in all probability, existed for a great length of time.

CASE XVIII.

Copious Effusion into the Ventricles ; great Congestion of Blood-vessels ; old Cysts ; Atrophy of the Brain.

William Parker, æt. 62. He suffered an apoplectic fit late in the evening of Aug. 4th, 1834. His face was drawn to the left side ; there was paralysis of the right arm and leg. His intellect had become impaired, and he had been confined to bed three or four months past. He has dragged his right leg for twenty years. He lived about 24 hours after the attack.

Inspection, Aug. 6th, ten hours after death.—Head : Brain. Dura mater was tough and there were opaque spots on the arachnoid. The blood-vessels were very considerably loaded. There were two cysts of old standing on the superior surface of the right hemisphere, as large as a walnut ; the lining was fawn-coloured, and they contained fluid : these cysts did not touch upon the central parts of the hemisphere. A similar cyst existed in the centre of

the left hemisphere ; the corpora striata and thalami were entire, and appeared healthy. On the surface of the right lobe of the cerebellum there were small remains of an old extravasation. The ventricles were very large, and contained several ounces of fluid. The brain appeared much diminished : weight 2 lbs. 6 oz.

Remarks.—In this case it is most probable that death was occasioned by the loaded state of the blood-vessels, constituting an example of simple sanguineous apoplexy: The atrophy of the brain, together with the traces of old apoplectic deposits in several parts, denotes that the serous fluid had existed for a long time, and had probably no share in producing the fatal event.

CASE XIX.

Copious Effusion into the sub-arachnoid Tissue, and into the Ventricles ; Congestion of the Brain ; Hypertrophy of the Cranium. Sudden death.

Susan Fleming, æt. 89. About two months ago she suffered an apoplectic attack, which left hemiplegia of the right side and imbecility of mind. She died suddenly, after raising herself in bed.

Inspection, fifty-nine hours after death, Dec. 3, 1834. Head : hypertrophy of cranium on the interior of the frontal region. The dura mater adhered

firmly to the cranium. The arachnoid was opaque and thick, and raised by a large quantity of fluid effused beneath it. The ventricles were distended with fluid, and the septum lucidum was reduced to a pulpy mass. A large quantity of blood escaped on opening the skull, and the smaller blood-vessels of the brain were much injected. No lesion or extravasation could be detected. Weight 2 lbs. 12 oz.

Remarks.—In this case the serous fluid had been accumulating for a considerable length of time. The large quantity of blood that escaped from the lateral sinuses on making the section of the skull, and the injected state of the smaller blood-vessels, are a sufficient cause to account for the sudden death. The pulpy state of the septum lucidum, examined fifty-nine hours after death, and in so old a subject, can scarcely, I imagine, be considered as influencing the fatal event.

CASE XX.

Apoplexy; Arachnitis; Effusion of Serum beneath the Membranes and into the Ventricles; great Congestion of the Blood-vessels.

John Gough, æt. 40. He dropped down suddenly in a fit, whilst grooming a horse, July 29th, 1834. He remained insensible all the night, and when admitted in the morning he appeared in a state of stupor, as if from intoxication; his head dropped on

his chest, and he was throwing his arms and legs about. Pulse very small. He rallied sufficiently in the evening so as to relate some of the occurrences preceding the fit. Convulsive twitchings of left extremities, afterwards of both sides, came on: delirium, loud talking, and great heat of the scalp. No palsy. He died eight days after the fit.

Inspection, Aug. 6th, eight hours after death.

Head: skull thick. The membranes were very opaque, tough, and contained a considerable quantity of fluid. The blood-vessels of the membranes and brain were loaded with blood, but no extravasation or lesion could be detected. The ventricles were large, and contained several ounces of fluid. The brain was tough and stringy, and weighed 2 lbs. 14 oz.

Thorax: heart large, ossification of aorta, and thickened mitral valves. Right lung emphysematous.

Abdomen: one or two cysts on the kidneys; and the external surface was irregular and slightly granular.

Remarks.—From the state of the membranes, and the tough and fibrous state of the brain, there can be no doubt that a great quantity of serous fluid was present in the cranium at the time of the apoplectic attack. I apprehend the sudden fit to have been one of simple sanguineous apoplexy, occasioned by vascular fulness: the subsequent arachnitis might increase the effusion in the sub-arachnoid tissue.

CASE XXI.

Very copious Effusion into the Ventricles; an old Cyst; Congestion of the Brain.

Ann Thacker, æt. 71. Admitted Jan. 14, 1833, in a very feeble state. In February she lost the left eye from inflammation and suppuration of the internal textures: calomel was given her as a remedy, which produced copious salivation. She recovered, and continued tolerably well up to March 14th, when stupor and drowsiness came on. The remedies applied produced no effect in rousing her: her pulse gradually fell, the coma became nearly complete, and she died on the 16th.

Inspection, March 17th, twenty-eight hours after death. Brain: the blood-vessels of the membranes and substance of the brain were turgid with blood. A large quantity of fluid was found in the sub-arachnoid tissue. The ventricles were largely dilated, and capable of containing 12 oz. of fluid. The septum lucidum transparent and cribriform. In the posterior part of the left thalamus there were the remains of an old cyst, about the size of a sixpence, the surface of which was covered with an ochry deposit.

Thorax. Heart: ossific deposit on the aorta, and at the base of the aortic valves. Lungs: old pleuritic adhesions.

Abdomen: hyperemia of the mucous membrane of the great intestine.

Remarks.—This case is remarkable for the extent of serous effusion into the ventricles, amounting to 12 oz. : from the general appearance of the brain, and the state of the septum lucidum, there is every reason to believe that the fluid had existed there for a considerable time, and that it had been slowly accumulating. The supervention of stupor and her speedy death, are more likely to have arisen from the congestion of the blood-vessels than from any pressure exerted by a sudden or rapid increase of the fluid.

As this and the succeeding papers are strictly pathological, I have in many of the cases given but a short account of the chief or prominent symptoms, and I have also said little or nothing respecting the medical treatment.

There is no class of diseases in which the histories are liable to so many sources of fallacy as those of the brain, resulting as well from the state of our knowledge of the physiology and pathology of this organ, as from the imperfect and deceptive accounts we obtain from the subjects of these diseases.

The principal object I have had in view, in the course of this paper, has been, to shew that most of the cases of reputed serous apoplexy do not arise from the presence of the serous fluid within the head, but are referable to simple sanguineous apoplexy; yet I am not prepared to state that no such disease as serous apoplexy exists: on the contrary, there are

some rare cases reported that do not appear to admit of explanation on any other ground.

It will be obvious that the foregoing facts and observations do not apply or refer to the acute form of inflammation of the brain termed hydrocephalus acutus of children or adults, in which a collection of fluid in the ventricles forms one of the pathological conditions observed on dissection.

We daily observe the pernicious consequences which result from a disposition to generalize on a few particulars in the science and practice of medicine, and I wish to avoid this error; but I submit that the foregoing facts, with many more that might be cited, render the following inferences highly probable:—

1st. That very copious effusion of serous fluid is found between the membranes and in the brain of persons of all ages, more especially between the ages of fifty and seventy years, who have died of various diseases of the thorax and abdomen, and who manifested no appreciable symptom of cerebral disease during life. That under similar circumstances, various other morbid appearances are found in the brain, as thickened membranes, diseased blood-vessels, tumours, &c. That these several morbid states of the brain did not occasion the death of such persons.

2dly. That effusion of serious fluid into the ven-

tricles and membranes, to a very considerable extent, exists in the brain of persons who have suffered previous apoplectic attacks, attended with paralysis and general or partial atrophy of the brain. That, most probably, this effusion and atrophy have existed for many years, without producing the disease termed serous apoplexy: that persons so circumstanced live to an advanced age, and are destroyed by other maladies.

3dly. That in persons whose brain has long contained a large quantity of fluid, with or without any trace of previous apoplectic extravasation, and who have suffered a first attack or a subsequent attack of fatal apoplexy, it is probable that the brain, from this cause, is rendered less impatient of injury from extravasation of blood. This position is exemplified in a remarkable manner in Case VI., of extravasation into the ventricles, and in Case X., of extravasation on the surface of the brain.

4thly. That a loaded state of the blood-vessels is sufficient to produce all the symptoms of sanguineous apoplexy, and to occasion death without extravasation. It is probable that when this state of the vessels is found connected with only a small quantity of fluid in the membranes or ventricles, that death has been occasioned by simple sanguineous apoplexy. That convulsions in children, arise in general from cerebral congestion, and are essentially cases of sanguineous apoplexy.

5thly. The conclusion is highly probable, that in very many instances of sudden or speedy death, which have been supposed to be occasioned by the presence of serous fluid discovered on dissection in the membranes or ventricles, death is not attributable to this fluid, or to serous apoplexy; but the inference is much more reasonable, that these cases may be referred to simple sanguineous apoplexy, the fluid in the brain having nothing to do with the fatal event.

ON
HYPERTROPHY
AND
ATROPHY OF THE BRAIN,

BY JOHN SIMS, M.D.,

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READ MAY 26TH, AND JUNE 9TH, 1835.

I.

Hypertrophy.

THE term hypertrophy of the brain has been restricted by some pathologists to an unnatural increase of volume of the organ, by the mere addition of particles of the same character as the original: this definition implies a too limited view of the subject. In the following pages I shall use the term as referable to two states; one consisting in simple enlargement, the other where a change of texture in the cerebral substance also exists.

In the writings of pathologists, allusions have sometimes been made to the circumstance of the brain far exceeding the ordinary or average magnitude; we are however chiefly indebted to the French pathologists of the present century, for calling our attention to the subject of hypertrophy as one of the dis-

eases of the brain. British physicians have very rarely taken any notice of it.

I intend, in the first place, to give a very short report of the opinions of a few authors who have written on the subject.

II. To relate the histories of several cases of hypertrophy which have fallen under my observation.

III. To attempt to ascertain the average weight of the brain of persons of all ages, from a very large number of cases in which the brain has been weighed.

IV. To give short notices of a number of brains which exceeded the average weight, from various causes, but which scarcely come under the description of hypertrophy.

V. To relate the histories of several cases of atrophy of the brain, both general and partial.

VI. In conclusion, to draw such inferences as the facts and observations, detailed in the paper, appear to warrant.

In the *Journal de Médecine*, &c., edited by Corvisart, Leroux, and Boyer, for June, 1806, there is a paper on hydrocephalus internus, by M. Matthey, of Geneva, to which is appended another, entitled, “*Reflexions sur les observations précédentes et sur*

l'hydrocéphale aiguë en general", by M. Laennec. This distinguished pathologist appears to be one of the earliest in France to notice hypertrophy of the brain. After alluding to the observation of Morgagni, that in some bodies which he had examined, the brain seemed to be too large for the cranium which enclosed it, and on this account appeared to be compressed, he remarks, " M. Jadelot m'a dit avoir observé la même chose chez les enfans, et avoir remarqué q'un grand nombre de ceux qui meurent avec les symptomes de l'hydrocéphale interne, n'offrent autre chose à l'ouverture du cadavre que cette disproportion de volume entre le cerveau et le crâne. Il m'est aussi arrivé de voir quelques sujets que j'avais regardé comme atteints d'hydrocéphale interne, et qui à l'ouverture des cadavres, n'ont présenté qu'une très petite quantité d'eau dans les ventricules, tandis que les circonvolutions du cerveau, fortement applaties, annonçaient que ce viscère avait subi une compression qui ne pouvait être attribuée qu'à un volume trop grand et par conséquent à une nutrition trop active de la masse cérébrale." *

The observations of Laennec appear to refer exclusively to hypertrophy of the brain in children, and to those cases in which signs of hydrocephalus internus had been observed during life. He is also not aware of any change in the appearance or texture

* Journal de Médecine, by Corvisart, &c. Tome II. p. 669.

of the cerebral substance, except mere augmentation of volume *.

In the seventh volume of the *Archives Générales de Médecine*, M. Scoutetten relates a case of hypertrophy in the brain of a boy *æt.* 5½ years, in whom there was nothing remarkable, except the size and weight of his head, until within sixteen days of his death, when febrile symptoms came on, attended with more marked head symptoms during the last day or two. On examining the head, the brain was found to be much larger, and to have acquired a greater degree of consistence in all its parts than is usual in a child of five years old. The superior and posterior parts of the hemispheres were found to be those principally enlarged †.

M. Dance published, in 1828, a paper in the *Repertoire Général d'Anatomie et de Physiologie*, &c., entitled “*Observations pour servir à l'histoire de l'hypertrophie du cerveau.*” This essay has been generally referred to by subsequent writers as the best on this subject; it is however a very slender and imperfect description of this state of the brain. The

* “*L'augmentation de volume du cerveau n'entraînant aucune alteration dans la texture de ce viscère, il ne serait nullement étonnant qu'on n'y eût fait aucune attention.*” *Op. Cit.* p. 671.

† “*Le cerveau, devenu tres volumineux présente dans toutes ses parties plus de consistance qu'il n'en a ordinairement chez un enfant de cinq ans.*”—*Archives Générales de Médecine*, Tom. VII., p. 44.

author confines the term hypertrophy to an unnatural increase or accumulation, either in number or size, of the constituent atoms proper to any organ, and excludes the increase of volume which results from inflammation of the brain, serous or sanguineous congestion in its substance, or effusion into its cavities*. He relates four cases of this affection. In the first, the patient received a blow on the head about seven months before his death; he afterwards suffered epistaxis, severe and frequent paroxysms of head-ache. He fell down in walking from the bath, and died convulsed in about a quarter of an hour. On inspecting the brain, the convolutions were flattened; there was very little blood and no serous fluid in the encephalon. The author thus describes the appearance of the substance of the brain. “Toute la substance cérébrale ressemblait à du blanc d’œuf durci par la coction, son poids et sa densité étaient considérables, elle ne s’affaïssait point et résistait sous la pression. Soumise à une traction modérée, elle s’allongeait sans se rompre, et revenait ensuite sur elle-même, à la manière d’un corps élastique; on n’y

* “Par ce mot d’hypertrophie, nous ne voulons pas désigner l’augmentation de volume qui est le résultat d’une inflammation du cerveau, d’une congestion sanguine ou serreuse dans sa substance, ou d’un épanchement dans ses cavités; l’afflux et la stase des liquides augmentent alors en effet la masse apparente de ce viscère, mais ces liquides ne sont point incorporés et identifiés avec sa substance, comme il arrive dans l’hypertrophie véritable, qui consiste essentiellement dans l’accroissement contre nature, soit en nombre, soit en volume, des molécules constituantes propre à chaque organe.”

appercevait aucune trace de vaisseaux, aucune ponctuation ou coloration rouge; tout au contraire la substance corticale paraissait plus pâle, et la substance médullaire plus blanche que dans l'état naturel."*

The second and third cases present appearances somewhat similar to the first: the fourth case is misplaced, as it scarcely comes within the description of hypertrophy. In three of the cases where the cerebellum is mentioned, it is observed to be natural.

Portal, in his Treatise on Epilepsy, relates a case which comes strictly within the description of hypertrophy of the brain †.

Otto, in his Compendium of Pathological Anatomy, by South, remarks that hypertrophy of the brain is especially produced in rickets, and in rare cases may occur even before birth; that it frequently occurs at

* *Répertoire General d'Anatomie et de Physiologie Pathologique, &c. Tome V. p. 197.* I have not been able to meet with the Number of the *Revue Médicale*, containing the Essay of M^{dec}. Laennec on Hypertrophy of the Brain.

† "Un chaudronnier âgé d'environ 30 ans. L'ouverture du corps fut fait par M. Le Dac, qui reconnut que le cerveau était engorgé de sang, et que cet organe était d'un tel volume que la culotte du crâne ayant été enlevée, le cerveau paraît faire plus de saillié qu'à l'ordinaire, aussi eut on beaucoup de peine à le recouvrir par cette même culotte.

"La substance du cerveau cependant au lieu d'être ramollie, était en general durcie, principalement le corps calleux et autres parties de la substance medullaire, quoique paraissant plus imbibée de serosités que dans l'état naturelle, les plexus choroides étaient gorgés d'un sang noir." Sur l'Epilepsie, page 8.

birth, and sometimes attains a very large size : he supposes also that hypertrophy may be a mode of cure in a brain, the ventricles of which have been expanded by fluid at some former period. The cases of hypertrophy of particular parts of the brain he thinks are usually connected with vice of texture. In allusion to the state of brain which may be called acute hypertrophy, he remarks, " I have twice seen this to such extent that the elasticity of the brain thrust up the solid calvaria at certain points by bursting asunder slight fractures : the one case occurred in an epileptic patient ; the other in a body brought into the anatomical theatre, of which I have no account." *

Andral, in the last volume of his "*Clinique Medicale*," has an interesting chapter on hypertrophy of the brain. He supposes that the frequent repetition of cerebral hyperemia may be, amongst others, a cause of hypertrophy. He suggests the question, whether the hypertrophy we often find as the sole lesion in epilepsy may not be the cause of the disease, or whether it may be the effect of the frequent returns of the epileptic paroxysm. He relates four cases in which the appearances in the texture of the brain generally correspond, and are described almost in the words of Dance †.

* *Compend. of Pathological Anatomy*, by South, p. 390, et seq.

† *Clinique Medicale*, Tome V., p. 595.

In the *Précis d'Anatomie Pathologique*, Andral gives the fol-

Hypertrophy of the brain has been but little noticed by British pathologists; some allusions have, however, been recently made to the subject.

Dr. Bright, in his work on "Diseases of the Brain," relates one example of this disease, (Case 171,) which is referred to in the "Concise statement of the morbid appearances," under the head of "Increased volume of the brain;" and in the paragraph "Convolutions flattened," he observes, "the convolutions are occasionally found to be compressed without our being able to discover any obvious cause except a disproportion between the volume of the brain and the cavity of the skull." He refers to cases 308 and 259: the first presents all the signs of hypertrophy in a child, who received an injury of the head three weeks before death and suffered repeated convulsion fits: the other case seems more properly referable to the encroachment of a morbid growth within the skull, producing the flattening of the convolutions, as noticed

lowing definition of hypertrophy:—"L'hypertrophie du cerveau présente les caractères anatomiques suivans: les circonvolutions sont rapprochées et applaties; on ne voit plus aucun intervalle entr'elles; il semble que les meninges, immédiatement appliquées sur le cerveau, soient devenues trop étroites pour le contenir. La substance nerveuse est ferme, et oppose à la traction une résistance inaccoutumée; elle contient peu de sang, et lorsqu'on l'incise, on est frappé de la sécheresse des coupes. Les ventricules sont comme effacés, et les surfaces encéphaliques sont privées de leur humidité ordinaire. Du reste, la texture du cerveau n'a subie aucune alteration." Tome II., p. 775.

in the succeeding part of the paragraph from whence I have quoted *.

Dr. Alexander Thomson has recorded a case of "Hypertrophy of the Cerebrum, accompanied by ramollissement, mistaken for chronic hydrocephalus," in the *Lancet* for July, 1830. I shall have occasion to notice this case in reference to one analogous to it in a subsequent part of this paper†.

In the numerous dissections of the brain in fever reported by Dr. Smith, he mentions one instance in which "the substance of the brain was exceedingly firm, and seemed to distend and protrude its membranes, so that there seemed something like hypertrophy of its substance."‡

In a lecture by Dr. Elliotson, printed in the *Medical Gazette* for 1832, he incidentally alludes to hypertrophy of the brain. The lecture appears to be elementary, and the author remarks, "I never saw but one instance of this affection: the brain had become larger than it should be; it caused the skull to be very much beyond the usual dimensions, and looked, on opening the skull, as if it had been ready to burst asunder. The convolutions were all very large." The patient was a boy, who was ex-

* Medical Reports, "Diseases of the Brain." Part II. p. 675.

† *Lancet*, No. CCCLXI, (Supplement,) 1830, p. 699.

‡ Treatise on Fever, by Dr. Southwood Smith.

ceedingly precocious ; had a head larger than a man's ; his character corresponded with that of an adult : he suddenly became apoplectic, hemiplegic, and died. Nothing was found on dissection but an excessive size of the organ, the brain in other respects being healthy*.

Mr. Sweatman has related a case of " premature development of the brain," in a child two years old ; the cerebellum partaking of the enlargement, though in a less degree than the cerebrum. The head measured from ear to ear, over the vertex, twelve inches ; the circumference, twenty-one inches ; the weight of the brain, two pounds fifteen ounces and a half, avoirdupois. In this case the brain was highly vascular, and the convolutions had their usual rounded appearance†.

In a paper by Dr. Stoker, on "*apoplexia cephalitica*," the author proposes to divide Cullen's third species into two varieties, viz. *apoplexia cephalitica* and *apoplexia hydrocephalica*, in order to include in the former those cases where the symptoms have clearly marked the disease termed *hydrocephalus acutus*, but in which on dissection no fluid was found in the encephalon. The principal case which he adduces as the ground of his views, appears, from the following short account given of the dissection, to be one of hyper-

* Medical Gazette, Vol. IX., p. 622.

† Med. Gaz., Vol. XV., p. 504.

trophy of the brain. A young gentleman, æt. 11, was attended by Dr. Grattan and the author: he suffered fever of twenty-one days' duration, and in the last eight days acute headache, delirium, tossing the hands to the head, strabismus, dilatation of the pupils, and impaired vision supervened. The following is the report of the dissection of the brain:—"On the most minute examination of the brain, made by Mr. Kirby the day after death, no effusion or disorganization could be detected in it, excepting that when the cranium was first removed the encephalon seemed to us to be in size more than proportioned to the bone that contained it, and to expand itself considerably over the under section of the base of the cranium."*

In the article "Hypertrophy" (Brain) in the *Cyclopedia of Practical Medicine*, by Dr. Townsend, a very brief description is given, taken from some of the writers on the subject. Vol. I.

Having given a short survey of the principal part of what has been recorded more recently on the subject of hypertrophy of the brain, I shall now proceed to relate several cases of this affection which have fallen under my notice; and in doing so, I must bespeak the patience, or at least the indulgence of the Society, for I am well aware that I have little more to produce than a dry detail of facts and observations.

* Trans. of Dublin College Association, Vol. II., p. 34.

The subject is however, I conceive, in all its bearings, well worthy the attention of the pathologist and the physician.

CASE I.

Hypertrophy of the Brain; death from Enteritis.

I was requested by one of my friends to accompany him to examine the body of A. B., æt. 16, who had died from inflammation of the bowels. After the examination of the cavity of the abdomen was completed, her head being now uncovered, I remarked to her mother that there must be some disease in the brain, from the enormous size of her daughter's head. She observed, " Oh, Sir, that is an old complaint; ever since she was a child she has had water in the head. She has been a patient of one of the hospitals, and they wished to tap her head, but I would not consent to it." I returned in the evening, and examined the head. From her mother I learned the following particulars of her history. She was subject to some kind of fits until she was seven years old : the catamenia appeared at fourteen ; she had an enormous appetite ; there was no paralysis, but a very great weakness of all her limbs ; she complained much of giddiness, and had a bad memory ; she had a difficulty in learning and performing the ordinary mechanical arts of her sex, as sewing, &c.

The attack of enteritis came on from exposure to wet, and speedily proved fatal. No cerebral sym-

ptoms were noticed by her medical attendant during her last illness.

Inspection of the body.—The head appeared to be nearly twice the ordinary size for a girl of her age, with a remarkably large and perpendicular forehead ; her features were handsome ; her expanded forehead resembled that of some of the finest busts of Jupiter. She was broad across the pelvis ; her extremities rather less than usual, and her hands remarkably small.

Head.—Ossification of the cranium complete. Brain : the arachnoid was much thickened by the deposition of slightly opaque lymph on the upper parts of both hemispheres. The cerebrum was very firm to the knife, and presented no unusual appearance except its enormous size : the quantity of brain appeared to be double that of a person of her age. The cerebellum did not partake of the enlargement. The ventricles contained only from two to three ounces of clear fluid. The cranium was not measured, nor the brain weighed.

Abdomen.—The descending portion of the colon was perforated by ulceration. The peritoneum was highly inflamed, and in the left iliac region there were considerable adhesions by plastic lymph between the parietes of the abdomen and the contiguous portions of the alimentary canal.

Remarks.—This appears to be a case allied to

rickets, from the imperfect development of some parts of the body. The brain was simply enlarged: the texture of it did not present any thing in its consistence or in any other respects different from ordinary cerebral substance. The disposition to enlargement of the brain, if it did not commence before birth, most probably appeared at a very early age, for the size of the girl's head very soon attracted the attention of her mother and the medical men whom she consulted. The preceding "fits," loss of memory, small hands, and defective power of using them, are all circumstances of considerable interest in this case. She had no brain symptoms during her last illness, and the increased development of the brain does not appear to have been incompatible with the continuance of life, her death being occasioned by a disease entirely independent of it,—a perforation of the intestine in consequence of inflammation.

CASE II.

Hypertrophy of the Brain. Death from Extravasation of Blood into one of the Crura Cerebri. Disease of the Stomach and Duodenum.

Martha Lock, æt. 40, has been in the Infirmary upwards of three years, and from the great severity of her sufferings had particularly, and for a long time, attracted the attention of some of the Directors and others who occasionally visited the hospital. She fell

to my lot on the division of the patients when Dr. Hooper retired, and remained under my care until the time of her death.

She has for several years suffered at intervals severe paroxysms of pain referable to the pyloric end of the stomach and duodenum, accompanied with vomiting of large quantities of thin mucous and green bilious fluid, amounting to many pints during the paroxysm. The paroxysm is also attended with the most intense head-ache. Her sufferings have been sometimes so great as to deprive her of reason for a time, and at others to produce a state of coma. In one of the attacks she bit her tongue nearly half across, and more than once attempted to destroy herself in order to put an end to her agony.

June 8, 1832. For the last three days she has been suffering a paroxysm of very great severity, attended with violent convulsive agitation, and vomiting of dark green fluids, with constant purging. She had two fits of an epileptic character yesterday, and three this morning. She died suddenly about one, p. m.

Inspection 24 hours after death.—Head. A considerable quantity of blood escaped on dividing the skull. On removing the calvaria the dura mater was remarkably distended, and appeared protruding as from pressure within. The convolutions

were much flattened, and their divisions almost obliterated. The medullary matter was throughout of a dead or flake white colour; scarcely any red points appearing in the sections made of the blood-vessels ramifying through it. The substance of the brain appeared to be much increased in firmness and in bulk. The membranes were very dry, and the pia mater adhered very firmly to the surface of the brain. The ventricles were contracted in size, and contained no fluid. In the right crus cerebri, which was in some slight degree softened, there was a small clot of recently extravasated blood, the size of a pea. A small body, very much resembling an enlarged absorbent gland in any other part of the body, was found in the arachnoid near the basilar artery. Cerebellum natural. The brain was not weighed.

Thorax.—Heart : hypertrophy of the left ventricle, with contraction of the cavity. In the lungs, a small cavity in the upper part of one of the lobes.

Abdomen. Stomach.—The mucous membrane was much thickened and vascular, and this thickening extended to the tissue beneath. The rugæ were large and elevated : a considerable quantity of mucus adhered to the surface. The pyloric valve was much thickened, and its area contracted.

Intestines.—The *duodenum* was considerably di-

lated; there was high vascularity of the mucous membrane, and thickening throughout: this vascularity extended to some distance along the small intestine.

Pancreas.—The blood-vessels remarkably large and dilated. Liver and kidneys healthy. Spleen small and broken down. Uterus healthy. Small cysts in the ovaries *.

Remarks.—In this case the hypertrophy of the brain was probably influenced, if not occasioned by the diseased state of the stomach and duodenum, producing the frequent paroxysms of continued vomiting and severe headache; and I think it is highly probable that, in the more severe forms of what is commonly termed sick headache, a state of the brain may be induced by its frequent recurrence, favourable to, or ultimately productive of, hypertrophy of this organ.

The fatal termination of this case took place almost instantaneously from the small quantity of blood extravasated in the right crus cerebri. The

* In the “Principles and Illustrations of Morbid Anatomy,” published by Dr. Hope, he has incidentally alluded to the morbid appearance of the stomach of this patient, but he has been led into a mistake in stating that “*the other viscera were healthy.*” Probably he might not have been present when these organs were examined. “Description of Plates,” p. lxvi.

pons varolii and the crura are highly impatient of injury, and probably the part affected in the brain had some share in producing the speedy death; but it would also appear that, on the principle of compression, the brain, already expanded beyond its due bounds, could not sustain the increased pressure of a very small quantity of extravasated blood.

In reference to sanguineous apoplexy and other diseases of the brain, I believe the future investigation of the subject of this paper will lead to important pathological and practical results.

In an instance of a man 50 years of age, who died suddenly from rupture of one of the aortic valves, and who had complained of constant nausea, vomiting of food, pains in the pit of the stomach, and other signs of organic disease of the stomach, on inspecting the body the pylorus was diseased, and the brain was found to be very large and pale, and weighing 3 lbs. 1 oz. with very small ventricles: the arachnoid membrane was opaque, and some fluid was contained beneath it.

The first case reported by M. Dance resembles this in the suddenness of the death of the patient, most probably arising from simple sanguineous apoplexy. The second case of the same author also resembles it, in the convulsions preceded by copious green vomiting.

CASE III.

*Hypertrophy of the Brain ; Convulsions ;
Insensibility ; Stertorous Breathing.*

Joseph Trendal, æt. 22. A short time ago he had taken a large quantity of mercury for the cure of syphilis. He was admitted March 6th, 1833. He was reported insane, but when visited he was quite rational, although unable to control the spasmodic motions of the muscles of his extremities, which were thrown about, and much distorted. Cupping, and other depleting measures, brought him into a quiet state ; and he expressed himself as feeling much better. On the evening of the 9th he was suddenly seized with a fit resembling epilepsy, which soon however assumed a confirmed apoplectic character, attended with complete insensibility, stertorous breathing, and general convulsions. He died the following evening.

Inspection forty-three hours after death.—Brain. The convolutions were much flattened, and closely pressed together. The blood-vessels were almost entirely empty. The membranes were quite dry, and the ventricles appeared to be almost obliterated, and would scarcely contain a dram. The structure of the brain was generally hard, firm, and of a pinkish hue. It weighed 3 lbs. 9 oz.

Thorax.—Heart natural. The lungs were gorged

with blood, and pus was found in the bronchi. This dissection was reported by Mr. Jorden.

Remarks.—This is an instance of hypertrophy to a considerable extent, the brain weighing 3 lbs. 9 oz., containing little or no blood in its vessels, and no serous fluid between the membranes or in the ventricles. The patient's symptoms appear to be strictly apoplectic, and the examination of the brain would no doubt afford to many pathologists another instance of a person dying with all the marked symptoms of apoplexy, and the dissection developing a perfectly healthy state of the brain. But I think that a patient consideration of the facts I have adduced in this paper, and in a former one which was read to the Society, leads to the more just and rational explanation of the phenomena, that the brain was in a state of hypertrophy, and that a very small additional compression from blood would occasion death by simple sanguineous apoplexy. This case bears a striking analogy to the preceding one, No. II.

CASE IV.

Hypertrophy of the Brain; Pulmonary Tubercles; Enlargement of the Heart; Dilatation of the Right Ventricle; Sudden Death.

James Tipton, æt. 40. Admitted Dec. 31. He has cough, dyspnœa, purulent expectoration, and diarrhœa. He died rather suddenly, after rising from bed.

Inspection, Jan. 8, fifteen hours after death.—

Head. There was a considerable quantity of fluid in the cavity of the arachnoid, and in the sub-arachnoid tissue. There were two large bladders on the superior margin of each hemisphere, which seemed to have broken down the filamentous tissue between the pia mater and arachnoid. The brain was remarkably turgid with blood, was firm, and cut like ground-rice pudding. Weight 3 lbs. 7 oz.

Thorax.—The lungs were studded throughout with tubercles, and there were several small cavities in different parts of the lungs. Heart large, with considerable dilatation of right ventricle.

Remarks.—The symptoms of this patient, up to the fatal attack, were referable to the disease of the heart and lungs. His sudden death may be attributed either to the state of the heart or to the state of the brain; but the latter I think is more probable, from the congested state of the brain, its firm consistence, and its weight, 3 lbs. 7 oz. It is probable that the obstructed circulation in the brain, occasioned by extensive and encroaching diseases of the heart and lungs, may in many instances tend to produce hypertrophy of the brain.

CASE V.

Hypertrophy of the Brain; Phthisis Pulmonalis; Ramollissement.

Charles Russell, æt. 24. Admitted with the or-

dinary signs of pulmonary tubercles, which had been attended with occasional hæmoptysis, and frequent pleuritic attacks. He complained of headache, and was delirious during the last four days.

Inspection, thirty hours after death, March 7th, 1834.—Head. The convolutions of the brain were flattened to an extreme degree. There was no fluid between the membranes, and but little in the ventricles. The brain appeared increased in bulk, particularly in the medullary portion. There was ramollissement of the centre of the posterior lobes of the cerebrum. The septum lucidum, also, and the fornix, were softened nearly to a pulpy state. Weight, 3 lbs. 5 oz.

Thorax.—Lungs beset with tubercles and small cavities. A small ulcer on the mucous membrane of the larynx.

Abdomen.—Ulceration of small intestines.

Remark.—In this case the brain weighed 3 lbs. 5 oz., in a consumptive patient, who suffered headache and delirium during the last four days of life. Inflammation of the substance of the brain had also taken place, and occasioned the ramollissement in the medullary portion of the posterior lobes, and the pulpy state of the septum lucidum and fornix.

CASE VI.

*Hypertrophy of the Brain ; flaccid Heart ;
sudden Death.*

Elizabeth Garratt, æt. 70, was admitted into the surgical wards, and was under treatment for iritis. She was not known to suffer any other affection. After tea, March 15th, in her ordinary state of health, she dropped down and died suddenly.

Inspection, twenty hours after death.—Brain. The arachnoid was milky, and there was some serous effusion in the sub-arachnoid tissue. The blood-vessels were but little dilated, and there was very little blood in the substance of the brain. The medullary matter of the cerebrum was remarkably white, and cut like hardened custard. No other disease in the brain. Weight, 2 lbs. 15 oz.

Thorax.—The muscular structure of the heart was remarkably flaccid. No other change. Lungs healthy.

Abdominal viscera healthy.

Remarks.—This patient, aged 70, died suddenly, and on dissection a flaccid state of the heart was found, and the appearance of the brain strikingly denoting hypertrophy of that organ;—the bloodless state and white colour of the brain, with the consistence resembling coagulated albumen, and the weight, 2 lbs. 15 oz.,

much beyond the average for her age. Several instances are on record of sudden death, in which nothing is reported to have been observed but a flaccid or an attenuated state of the muscular structure of the heart, without blood or coagula in the cavities, and sudden death has been attributed to this cause ; but in this case it is far more likely to have occurred from the hypertrophous state of the brain, and it is not unfair to suppose that this condition of the brain may have been overlooked in similar cases*.

CASE VII.

Hypertrophy of the Brain ; diseased Kidney ; Death from diffuse Inflammation.

Mary Catlin, æt. 29, admitted with the second attack of general dropsy from diseased kidney : a tall woman, accustomed to hard labour. She was attacked with erythematous œdema of the face, which rapidly extended to the left arm, and destroyed her.

Inspection, forty-four hours after death.—Head. Brain very dense ; convolutions flattened ; ventricles small and dry ; the absence of fluid in the brain was very remarkable. Weight, 3 lbs. 2 oz.

Kidneys enlarged ; red granular disease in both.

* Vide “ An Account of Three Cases of Sudden Death, with the Appearances on Dissection, and some additional Observations, by T. Chevalier, Esq.,” in Vol. I. of the “ Transactions.”

Remarks.—The brain of a dropsical patient frequently partakes of the same state, and we find fluid in its cavities as well as in the thorax, abdomen, and extremities; but in this case all the signs of hypertrophy of the brain were present without any fluid. The patient suffered general dropsy from granular kidneys, and died in consequence of diffuse inflammation of the face and left upper extremity.

CASE VIII.

Hypertrophy of the Brain; Congestion of the Blood-vessels; no Fluid; Death from malignant Cholera.

Margaret Hastie, æt. 48, was taken suddenly at 8 a. m., Dec. 3d, 1832, with the symptoms of a severe form of malignant cholera. She lived twenty-six hours after the attack.

Inspection, Dec. 4th.—Head. The blood-vessels of the membranes and substance of the brain were highly loaded. No fluid was found between the membranes or in the ventricles. The roof of the right ventricle adhered to the corresponding part of the corpus striatum. The cranium appeared well filled, the brain was large, and weighed 3 lbs. 5 oz. The brain had a peculiar appearance when cut into, resembling coagulated albumen with a quantity of plaster of Paris mixed with it.

Thorax.—Heart hypertrophied; a number of small

tumours on the surface of the lungs. Some tubercles and one or two cavities were found in the lungs.

Abdomen.—Cholera fluids in the intestine ; in some parts feculent matter. Extensive thickening and ulceration of the ileum and cœcum.

Remarks.—In this case of malignant cholera the usual congested state of the vessels of the brain was found, but there was no serous fluid, and the brain was large, and weighed 3 lbs. 5 oz. Its texture presented the appearance of coagulated albumen with some heavy powder mixed with it, and in all respects a state of the organ resembling hypertrophy of the brain.

CASE IX.

Hypertrophy of the Brain, in a Child æt. 11 months.

Dec. 14, 1832, I was requested by Mr. Jorden, of Belgrave Street, to accompany him to examine the body of Caroline Bays, a child, aged eleven months. I received from him the following particulars of the child's history. Her head was observed to increase in size in an unusual degree about six weeks after birth : the general health was good until about three days ago, when she became feverish, with rapid pulse and constipated bowels. At this time the head was much enlarged, the forehead being remarkably prominent ; the fontanel enlarged, firm, and

tense to the touch; superficial veins enlarged; the eyes were generally fixed in a downward direction, more especially the left. The child was constantly moaning, and rolling its head from side to side and tossing its hands about. Convulsive twitchings latterly came on. The mother has had four children, all of whom died either a few days or weeks after birth. Leeches, cold lotions, and purgatives were used without effect.

Inspection, eight hours after death.—Head. The fontanels were large, sunk, and flaccid: cranium of rather unusual thickness. The circumference of the cranium, after removing the integuments, at the largest axis measured seventeen inches and a half, and from one meatus auditorius internus, over the vertex to the other, twelve inches. The membranes and substance of the brain were bloodless. The brain was very much enlarged, and its consistence rather softer than usual. The ventricles contained about one ounce of fluid.

Thoracic and abdominal viscera were natural, with the exception of some enlarged mesenteric glands.

Remarks.—A case of hypertrophy in a child eleven months old, rapidly increasing soon after birth, and presenting all the signs of chronic hydrocephalus internus. The magnitude of the brain appeared to be nearly double that of a child of its age. The brain and membranes were found almost free from

blood. From the soft state of the brain, it is probable that an inflammatory process had been going on during the latter period of the child's life.

The case related by Dr. Thomson in the *Lancet*, to which I have before alluded, occurring in a child between four and five years old, bears some resemblance to the present case: the inflammatory state, and consequent ramollissement, had proceeded to a much greater length.

CASE X.

Hypertrophy; bloodless Brain; Death from Cholera.

Mary Ann Burk, æt. 10. Her mother reports she has always been a healthy child: has never had fits or any affection of the head. She has been quite healthy during the time she has been in the parochial school; the schoolmistress states that she is a very clever, intelligent child. She was attacked with all the characteristic signs of malignant cholera, and lived 68 hours in the cold stage without reaction. She was comatose, with tendency to delirium, but could be easily roused, and then would answer questions correctly.

Inspection.—Head. The cranium and sinuses of the dura mater were highly congested. When the calvaria was removed the dura mater appeared dis-

tended and tense; this was more observable in consequence of the blood having escaped from the longitudinal sinus, which occasioned a depression, and the two hemispheres then appeared much elevated. There was no serous fluid effused between the membranes, or into the ventricles. The arachnoid and pia mater were quite dry, very thin, and not separable from one another. There was very little blood in the vessels of the pia mater, or in the substance of the brain. The pia mater adhered in some parts to the brain, and brought portions of the gray matter away on tearing off the membrane. The convolutions were all flattened, as in extreme cases of compression from fluids within the brain. The gray matter was softer than usual, both on the surface and in the central parts. The medullary matter was remarkably white. The substance of the brain cut like blanc-mange or thick custard. Weight, 2 lbs. 14 oz.

Thorax.—Heart gorged with fluid blood. Lungs healthy, but slightly adherent.

Abdomen.—The usual appearances in the intestines of cholera patients.

Remarks.—This child died from malignant cholera, and on examining the brain the usual highly congested state was wanting; on the contrary, the brain appeared large, and disproportionate to the size of the cranium, the membranes were perfectly dry, and

there was no serous fluid in them or in the ventricles : the white matter presented all the signs common to other cases of hypertrophy. The softening of the gray matter, both in the central parts and on the surface, and that of the latter adhering to the pia mater, would seem to denote inflammation ; but the child remained in a state of collapse from the period of its seizure to its death, 68 hours. It is probable that the supervention of extensive inflammation of the brain might so far oppress the brain as to impede the reaction of the powers of the system.

CASE XI.

Hypertrophy of the Brain; Hooping-cough; Death from Pneumonia.

Mary Monroe, æt. 3. When first visited she was suffering from hooping-cough, which had existed about a fortnight. Severe pneumonia supervened, for which leeches, antimony, &c., were used, but without any effectual relief. She was quite insensible during the last 24 hours, with coma and occasional convulsions.

Inspection, Dec. 20th, 1832.—Head. There was excessive fulness of all the veins and sinuses in the skull. When the calvaria was removed, the brain appeared swollen and protruding beyond the margin of the section made by the saw. The convolutions were very flat, and the substance was firm, and of a consistence to

the knife resembling cream-cheese. The arachnoid was unctuous or sticky, and the pia mater adhered to the surface of the cerebrum. There was no fluid between the membranes or in the ventricles. The brain weighed 2 lbs. 15 oz.

Thorax.—Left ventricle and also the right appeared somewhat enlarged. The lungs were hepaticized, going on to the soft and purulent stage. The bronchi were inflamed and contained much mucopurulent fluid.

Abdomen.—The mesenteric glands were diseased.

Remarks.—This is a case of remarkably large brain in a child three years old, weighing 2 lbs. 15 oz. The skull and sinuses were congested with blood, but the substance of the brain was not so. There was no fluid in the membranes or ventricles, and all the other signs of hypertrophy were present. As in the case immediately preceding this, the symptoms and traces of inflammation of the substance of the brain were observed, which was most probably influenced by the state of the thoracic viscera consequent on hooping-cough and pneumonia.

CASE XII.

Hypertrophy of the Brain ; Death from malignant Cholera.

G. N., a girl æt. 10, had suffered one of the

most severe attacks of malignant cholera, from which she appeared to be recovering; she, however, had a relapse, and speedily fell a victim to the disease.

Inspection.—Brain. There was little or no fluid found in the membranes or ventricles: the brain appeared enormously enlarged, and weighed 3 lbs. 12 oz.

Abdomen.—The usual strongly marked signs of malignant cholera were found in the alimentary canal.

Remarks.—This little girl had almost entirely recovered from a severe attack of malignant cholera, when she relapsed and was carried off by the disease. She was observed to have a remarkably large head, but was perfectly intelligent in all respects. The weight of the brain, 3 lbs. 12 oz., is very remarkable for a child of ten years old.

Partial Hypertrophy.

It is frequently found that parts of the brain are enlarged beyond their ordinary size, either originally, or produced in after periods of life. The three following cases are examples of this partial enlargement of the brain.

CASE XIII.

Hypertrophy of one Hemisphere; old Apoplectic Cysts.

Esther Walters, æt. 60. She is reported to have

had a paralytic attack about two years ago, from which she was much relieved. She continued to move about until within ten days of her admission. Signs of arachnitis came on with coma, and she died June 21st.

Inspection. — Head. The left hemisphere occupied about two-thirds of the space allotted to the cerebrum. The left corpus striatum was enlarged to twice its usual size : the right corpus striatum was diminished in size. There were two apoplectic cysts in the left hemisphere and one in the right, of different dates.

CASE XIV.

Partial Hypertrophy, affecting the Corpora Striata, one Thalamus, and the Tuber Annulare.

C. D., æt. 60. A lunatic for twenty years with lucid intervals ; he was approaching to a state of fatuity ; he complained much of great weakness of the lower extremities. He had a carcinomatous disease of the lower lip, which Mr. Perry removed. The wound looked well at the time of his death.

Inspection.—Head. The skull was remarkably hard : there was considerable serous effusion between the membranes, and a large quantity in the intergyral spaces. On opening the ventricles, the corpora striata appeared pressed much closer to each other than usually. The right corpus striatum was twice

its ordinary size, the left slightly enlarged. The left thalamus was very much enlarged. The tuber annulare appeared half as large again as usual: the crura cerebri were also enlarged.

CASE XV.

Delirium Tremens; much Fluid; disproportionate size of posterior Lobes of Cerebrum. Hypertrophy of Os Frontis.

George Nigh, æt. 29. Talks incoherently. Universal tremor of the limbs. The delirium increased and he gradually sank. He had been pot-boy at a public house, and much addicted to drinking.

Inspection, Dec. 12th, 1832, seventeen hours after death.—The skull was remarkably thick, and in the frontal region about half an inch. There was much fluid between the membranes, and several ounces in the ventricles. The arachnoid was white. The skull was much larger than usual in the occipital region, which was occupied by the enormously disproportionate size of the posterior lobes of the cerebrum. The brain weighed 3 lbs. 8 oz.

Summary of the Appearances in the three preceding Cases.

No. 13. The left hemisphere occupied two-thirds of the space allotted to the cerebrum; there was

hypertrophy of the left corpus striatum, with atrophy of the right.

No. 14. There was hypertrophy of the corpora striata, the left thalamus, the tuber annulare, and the crura cerebri.

No. 15. The brain was heavy, weighing 3 lbs. 8 oz. The posterior lobes of the cerebrum were very much larger than natural : there was also hypertrophy of the os frontis.

The state of the brain which I have described, admits of division into two kinds ; one, a state of mere enlargement or addition of particles, without any appreciable or apparent difference from the ordinary state of the organ ; this appears to be connate, or connected with rickets, manifesting itself very early, and attaining in some instance a very great magnitude. In the other and most important form of hypertrophy, the weight of the brain is sometimes very materially increased ; but in this case it is not of so much value as the bloodless state of the brain, its freedom from serous effusion, its very white and albuminous texture, and the flattening of the convolutions, &c., which I have so often noted.

If we could ascertain with some degree of accuracy the average weight of the healthy brain at various periods of life, we should then be able to estimate

more nearly the extent of hypertrophy, so far as the circumstance of weight is concerned ; but almost all the attempts that have hitherto been made have been ineffectual and liable to error. The method to fix the weight of the brain on a scale, comparing it with the weight of the body, does not remove the difficulty, for some very thin subjects, exhausted by wasting diseases, have brains above the average weight, and it is well known that some of the heaviest bodies possess very small brains.

Haller states that in one child, a boy of six years old, he found the brain to weigh 2 lbs. $28\frac{1}{2}$ drams, the weight of the body being 50 lbs., or about $\frac{1}{22}$: in other instances he found the weight of the brain to be $\frac{1}{25}$, and $\frac{1}{30}$ the weight of the body. He further observes, "*Homini cerebrum aliquando libram cum semisse in adulto homine non superavit: alias fuit trium l., et trium l. atque 8 unciarum cum $\frac{1}{4}$, et quatuor librarum; quatuor porro et unciarum trium; quatuor et unciarum tantumdem, quatuor ad quinque; quinque denique et ultra.*"*

Soemmerring in the section "*Pondus Cerebri*," remarks, "*Cerebrum et cerebellum, resecta medulla spinali statim pone nervum lingualem medium pondo sunt librarum duarum ad tres libras, sunt enim alia cerebra pondere librarum duarum, et unciarum quinque cum dimidia, alia librarum trium et unciarum*

* *Elementa Physiologiæ*, Tom. IV., p. 10.

trium cum tribus quartis.”* His “Tabula Baseos Encephali” is taken from a child three years old.

The Wenzels, in their great work on the structure of the brain, state “Pondus encephali humani quale id de quinto vitæ anno ad summam usque hominis senectutem plerumque invenitur, pondus viginti quatuor millium granorum non superat.” Again, “Totius cerebri pondus inter viginti et viginti-duo millia granorum plerumque variat.”† They give a table of the weight of nineteen brains of various ages, from a fœtus of five months up to old age, 88 years.

Sir William Hamilton has taken great pains to ascertain the weight of the brain, and concludes, “that the adult male encephalos is heavier than the female; the former nearly averaging, in the Scot’s head, 3 lbs. 8 oz. troy, the latter 3 lbs. 4 oz., the difference 4 oz. In the male, about one brain in seven is found above 4 lbs. troy; in the female hardly one in a hundred.” Sir William founds this and other conclusions, “on an induction drawn from above *sixty human brains*,—from nearly *three hundred human skulls*, of determined sex, the capacity of which, by a method I devised, was taken in sand, and *the original weight of the brain* thus recovered.”‡ I

* De. Corp. Hum. fabrica, Tom. IV., p. 38.

† J. et C. Wenzel, De Penitiori Structura Cerebri, p. 267.

‡ The Anatomy of the Brain, &c., by Dr. Monro. 1831. p. 4.

think the weight of the brain cannot be fixed by ascertaining the capacity of the skull, by any means however accurate ; it is open to a source of fallacy, which appears obvious on inspecting the last column of Table I.

I have endeavoured to ascertain the weight of the brain in a great number of dissections of persons of all ages and both sexes, who died of diseases of almost every description, whether cerebral or otherwise : in some the brain was healthy, in others diseased in different degrees and forms.

The annexed Table, No. I., is taken from 253 dissections of the brain.

The first column specifies the sex.

The second, the age.

The third, the disease occasioning death.

The fourth, the weight of the brain.

The fifth, a brief notice of the appearances observed on dissection which might influence the weight.

In each case the weight of the whole encephalon is taken, the dura mater being removed ; the weight used is avoirdupois.

TABLE I.

Shewing the age, sex, fatal disease, weight of the brain, and other pathological appearances in 253 cases.

No.	Sex	Age	Disease occasioning death.	Weight of the brain.	Other pathological appearances.
		yrs.		lbs. oz.	
1.	M.	66	Purpura hæmorrhag.	3 1	Fluid.
2.	M.	13	Varicella	3 8	Fluid.
3.	F.	48	Malignant cholera . .	3 5	Great congestion; no fluid; hypertrophy.
4.	M.	5	Scarlatina	2 13	High congestion.
5.	M.	29	Delirium tremens . .	3 8	Hypertrophy of skull in frontal region; much fluid; posterior lobes of cerebrum enlarged.
6.	F.	53	Strangulated hernia . .	2 13	Congestion; fluid.
7.	M.	6	Scarlatina	3 1	Fluid.
8.	F.	21m	Pneumonia	2 5	Natural.
9.	M.	18m	Rubeola; epilepsy . .	2 3	Fluid; ramollissement.
10.	F.	3	Pertussis	2 15	Congestion; hypertrophy.
11.	F.	73	Pneumonia	2 7	Fluid; lymph.
12.	F.	53	Malignant cholera . .	2 14	High congestion; no fluid.
13.	M.	43	Fungoid tumour in thorax.	3 4	Fluid.
14.	F.	55	Diseased heart	2 11	Fluid; high congestion.
15.	F.	35	Diseased heart	3 6	Fluid.
16.	F.	29	Phthisis; pneumonia .	2 15	Fluid.
17.	F.	2	Pneumonia; inflammation of pia mater.	2 9	Lymph; fluid.
18.	F.	4	Pneumonia; inflammation of pia mater.	2 13	Lymph; fluid.
19.	F.	6	Phthisis; convulsion .	2 11	High congestion; fluid.
20.	M.	40	Phthisis pulmonalis . .	3 7	High congestion; fluid; hypertrophy.
21.	M.	74	Diseased heart	3 10	Fluid; high congestion.
22.	F.	77	Apoplexy	2 12	Much fluid.
23.	M.	65	Diseased heart	2 14	Congestion; no fluid.
24.	F.	60	Apoplexy	3 2	High congestion; fluid.
25.	F.	69	Carcinoma ventriculi .	2 13	Healthy.
26.	F.	34	Phthisis pulmonalis; tumour in cerebrum.	2 5	Fluid.
27.	M.	56	Phthisis pulmonalis; fungoid disease of kidney.	2 12	Fluid.
28.	M.	12	Pneumonia	3 6	
29.	F.	50	Phthisis pulmonalis (Lunatic).	2 10	Fluid; hypertrophy of brain.
30.	M.	55	Apoplexy	2 13	Much fluid.
31.	M.	46	Erysipelas, arachnitis.	2 15	Fluid; lymph.
32.	M.	22	Apoplexy	3 6	Little congestion or fluid; hypertrophy.
33.	M.	25	Phthisis pulmonalis; epilepsy.	2 13	High congestion; small cranium.
34.	M.	44	Apoplexy	3 7	Fluid; extravasation of blood.
35.	F.	73	Phthisis pulmonalis . .	2 0	Fluid; atrophy.
36.	F.	20	Phlebitis	2 15	Fluid; lymph in sinuses.
37.	F.	63	Pneumonia	3 8	High congestion.
38.	F.	12	Apoplexy	2 7	Much fluid; extravasation of blood.
39.	M.	54	Ramollissement of brain.	3 7	High congestion.
40.	M.	67	Pleuritis	2 15	Fluid.
41.	M.	21	Diseased heart and liver.	2 14	Healthy.
42.	F.	27	Pneumonia	2 12	Healthy.
43.	F.	45	Apoplexy	3 0	Fluid; high congestion.
44.	M.	35	Pneumonia	3 6	High congestion.
45.	F.	12	Idiot; apoplexy	1 11	High congestion; fluid.
46.	F.	40	Phthisis pulmonalis . .	2 11	High congestion; fluid.
47.	M.	32	Aneurism	3 2	Much fluid.
48.	M.	44	Phthisis pulmonalis . .	2 13	Fluid.
49.	F.	10	Pneumonia	2 14	

No.	Sex	Age	Disease occasioning death.	Weight of the brain.		Other pathological appearances.
		yrs.		lbs.	oz.	
50.	F.	71	Marasmus	2	5	Much fluid.
51.	F.	4	Malignant cholera	2	5	In nearly all the cases of malignant cholera the brain was highly congested; in some old people, fluid between the membranes.
52.	F.	5	Malignant cholera	2	3	
53.	M.	34	Malignant cholera	2	12	
54.	M.	20	Malignant cholera	3	5	
55.	F.	12	Malignant cholera	2	11	
56.	M.	63	Malignant cholera	2	7	
57.	M.	37	Malignant cholera	3	4	
58.	F.	55	Malignant cholera	2	15	
59.	M.	49	Malignant cholera	3	4	
60.	F.	40	Malignant cholera	2	7	
61.	M.	46	Malignant cholera	3	3	
62.	F.	31	Malignant cholera	2	13	
63.	M.	26	Typhus, phrenitis	3	3	High congestion.
64.	F.	45	Phthisis pulmonalis	2	14	Healthy.
65.	M.	65	Pneumonia	2	12	High congestion.
66.	M.	45	Ascites, pericarditis	3	6	Pale; healthy.
67.	M.	31	Ramollissement of spinal cord.	3	0	Old lymph; healthy.
68.	M.	60	Phthisis pulmonalis	3	0	Much fluid.
69.	F.	69	Diseased heart	2	14	Ramollissement of brain.
70.	F.	11	Phthisis pulmonalis	2	6	Little fluid.
71.	F.	50	Carcinoma uteri	2	10	Fluid; congestion; extravasation.
72.	M.	64	Apoplexy	2	7	
73.	M.	58	Phthisis pulmonalis	2	9	
74.	M.	73	Phthisis pulmonalis	2	14	
75.	F.	36	Enteritis	2	12	
76.	F.	46	Ovarial dropsy	2	7	
77.	F.	49	Aqueous cyst in liver	2	14	
78.	F.	2	Phthisis pulmonalis; convulsion.	2	1	
79.	F.	71	Apoplexy	2	9	
80.	F.	22	Abscess of liver	2	9	
81.	M.	59	Phthisis pulmonalis	2	14	
82.	M.	68	Dropsy	2	15	High congestion; fluid.
83.	M.	50	Phthisis pulmonalis	3	2	
84.	M.	9 m.	Phthisis pulmonalis	1	9	
85.	F.	76	Diseased heart	2	10	
86.	M.	75	Slough	2	11	
87.	F.	56	Apoplexy	2	15	
88.	M.	1	Tabes mesenterica; convulsion.	2	0	
89.	M.	50	Pneumonia	2	12	
90.	M.	60	Diarrhœa; tubercles	2	13	
91.	M.	67	Diseased heart	3	0	
92.	F.	60	Apoplexy	2	7	Fluid.
93.	F.	23	Phthisis pulmonalis	2	13	
94.	F.	80	Ramollissement of brain.	2	13	
95.	F.	34	Phthisis pulmonalis	2	8	
96.	M.	69	Phthisis pulmonalis	2	11	
97.	F.	61	Apoplexy	2	11	
98.	M.	44	Deposit of pus in various parts.	3	11	
99.	M.	84	Diseased bladder	2	9	
100.	M.	51	Diseased heart	3	3	
101.	F.	29	Diseased kidney; dropsy.	3	2	
102.	M.	82	Dropsy	2	10	Fluid.
103.	M.	35	Typhus	2	13	
104.	F.	16	Erysipelas; pneumonia.	2	15	
105.	M.	55	Typhus	2	14	
106.	M.	48	Pneumonia	2	13	
107.	M.	10	Phthisis pulmonalis; epilepsy.	2	10	
108.	F.	50	Lunatic; typhus	2	8	
109.	F.	1	Pneumonia; convulsion.	1	15	
110.	F.	8	Peritonitis	2	13	
111.	F.	33	Phthisis pulmonalis	2	13	
112.	F.	22	Phthisis pulmonalis	2	11	
113.	M.	24	Phthisis; delirium	3	5	No fluid; hypertrophy.
114.	F.	58	Abscess in pelvis	2	5	
115.	M.	6	Apoplexy	2	11	

No.	Sex	Age	Disease occasioning death.	Weight of the brain.	Other pathological appearances.
		yrs.		lbs. oz.	
116.	F.	45	Typhus	2 4	Fluid.
117.	F.	6	Tubercle in brain . .	2 3	Much fluid.
118.	M.	40	Peritonitis; inflammation of brain.	2 9	
119.	F.	12	Typhus; meningitis .	2 11	High congestion; lymph.
120.	M.	73	Paralysis	2 10	Fluid.
121.	F.	57	Diseased heart; dropsy	3 2	Much fluid.
122.	F.	71	Diseased heart . . .	2 13	Fluid.
123.	F.	69	Pneumonia; apoplexy.	2 12	Softening of both thalami.
124.	F.	25	Typhus, enteritis from perforation.	2 11	High congestion.
125.	F.	41	Dropsy	2 10	Healthy.
126.	M.	64	Carcinoma ventriculi .	2 11	Fluid.
127.	F.	34	Tabes mesenterica . .	2 9	Hypertrophy.
128.	F.	63	Ramollissement, brain	2 13	Fluid; interstitial effusion.
129.	M.	29	Phthisis pulmonalis .	2 9	
130.	F.	75	Pneumonia	2 4	
131.	M.	34	Pneumonia	2 10	
132.	M.	35	Emphysema; pleuritis from injury.	3 4	
133.	F.	10	Malignant cholera . .	2 14	Hypertrophy; no fluid.
134.	M.	68	Malignant cholera . .	2 7	Fluid.
135.	M.	40	Apoplexy	2 14	Congestion; fluid.
136.	M.	62	Apoplexy	2 6	Congestion; fluid.
137.	M.	65	Tubercle of thalamus .	2 10	Fluid; ramollissement.
138.	M.	66	Carcinoma ventriculi .	2 14	
139.	M.	14	Phthisis pulmonalis .	2 13	High congestion; fluid.
140.	M.	91	Apoplexy	2 6	Fluid; ramollissement.
141.	F.	49	Pneumonia	3 1	High congestion.
142.	M.	3	Bronchitis; convulsion	2 9	High congestion.
143.	M.	53	Dropsy	2 8	Pale; fluid.
144.	M.	63	Pleuritis, pericarditis .	2 15	Congestion.
145.	F.	69	Carcinoma of liver . .	2 14	Old adventitious membranes.
146.	M.	63	Chronic pleuritis . . .	2 15	
147.	F.	66	Chronic enteritis . . .	2 5	Healthy.
148.	F.	4	Pneumonia; gangrene of lung.	2 3	Pale.
149.	F.	36	Pneumonia; typhus . .	3 2	High congestion; fluid.
150.	F.	32	Phthisis	2 4	Membranes pale; healthy.
151.	F.	11	Phthisis pulmonalis .	2 10	
152.	M.	1	Pneumonia	1 15	
153.	F.	88	Enteritis	2 9	
154.	F.	46	Typhus	2 15	
155.	F.	83	Apoplexy	2 3	
156.	F.	23	Puerperal fever . . .	2 13	
157.	M.	70	Apoplexy	2 6	Much fluid.
158.	M.	79	Apoplexy	2 7	Extravasation.
159.	M.	47	Diseased liver	2 12	Fluid.
160.	M.	70	Apoplexy	2 6	
161.	F.	30	Pneumonia; arachnitis.	2 3	Lymph.
162.	F.	64	Dysentery	2 9	Tumour on dura mater.
163.	F.	63	Diseased heart	2 9	Fluid.
164.	M.	14	Phthisis pulmonalis .	2 14	Much fluid.
165.	M.	60	Phthisis pulmonalis .	2 5	Old remains of clot.
166.	F.	72	Pneumonia	2 11	High congestion; fluid
167.	M.	67	Bronchitis	3 0	Healthy; firm.
168.	F.	49	Scirrhus pylorus . . .	3 0	Pale; lymph.
169.	F.	5m.	Pneumonia	1 8	Nothing peculiar.
170.	F.	45	Typhus	2 15	No congestion nor fluid; brain of slate colour.
171.	F.	31	Phthisis pulmonalis .	2 14	Healthy.
172.	M.	46	Disease of heart . . .	3 3	
173.	F.	18m	Phthisis pulmonalis .	1 13	
174.	M.	10	Typhus	3 7	
175.	F.	89	Apoplexy	2 12	High congestion; much fluid; ramollissement.
176.	M.	79	Pneumonia	3 0	
177.	F.	50	Apoplexy	3 0	Extravasation.
178.	F.	67	Pneumonia	2 11	Much fluid; old cyst.
179.	F.	6	Phthisis pulmonalis .	2 7	Much fluid.
180.	F.	6	Phthisis pulmonalis .	2 6	Much fluid.
181.	M.	60	Carditis	2 14	Blood-vessels dilated; ramollissement.
182.	F.	78	Ramollissement	2 6	Old clot.
183.	M.	70	Apoplexy	2 4	Old cyst; fluid.

No.	Sex	Age	Disease occasioning death.	Weight of the brain.		Other pathological appearances.
		Yrs.		lbs.	oz.	
184.	M.	2	Pneumonia	2	3	Congestion.
185.	M.	65	Paralysis	2	9	
186.	F.	50	Mortification. (Lunatic.)	2	9	High congestion; fluids.
187.	F.	67	Pneumonia	2	14	Congestion; fluids.
188.	F.	9m.	Convulsion	1	10	High arterial congestion.
189.	F.	53	Diseased heart	2	8	Congestion; fluids.
190.	F.	60	Ramollissement of brain.	2	4	High congestion; much fluid.
191.	F.	17	Puerperal peritonitis .	2	13	High vascularity; inflamm ⁿ , 1st stage.
192.	M.	42	Apoplexy	2	14	Cyst between thalami.
193.	F.	41	Phthisis pulmonalis .	2	14	High congestion; hypertrophy of bone.
194.	F.	6	Pneumonia	2	5	Congestion; much fluid; softening.
195.	F.	35	Phthisis pulmonalis .	2	10	Congestion and fluids.
196.	M.	79	Angina pectoris . . .	2	11	Congestion; effusion.
197.	M.	59	Phthisis pulmonalis .	2	13	Congestion; effusion; diseased blood-vessels.
198.	M.	52	Pneumonia	3	0	Congestion.
199.	M.	1	Scrofulous tumours . .	2	4	Congestion; fluid; tumours.
200.	M.	75	Pneumonia	3	0	Fluid; opaque membranes; holes.
201.	M.	14d.	Pneumonia; convulsions.	0	14	Loaded vessels.
202.	F.	57	Carcinoma	3	0	Congestion great; fluid.
203.	F.	71	Carcinoma ventriculi .	2	10	Fluid.
204.	F.	57	Phthisis pulmonalis; diseased heart.	2	9	Fluid.
205.	F.	37	Typhus	2	4	Fluid; congestion.
206.	M.	41	Phthisis pulmonalis .	2	14	Little fluid.
207.	F.	67	Apoplexy; ramollissement.	2	8	Much fluid.
208.	M.	21	(Lunatic.)	2	12	Remarkably healthy.
209.	M.	83	Pneumonia; gangrene of lung.	3	2	Firm.
210.	M.	27	Enteritis	2	8	No fluid; healthy.
211.	M.	50	Diseased heart	3	1	Ventricles small; hypertrophy.
212.	M.	60	Apoplexy	2	10	Fluid; holes in brain.
213.	M.	62	Pneumonia	2	10	
214.	F.	70	Phthisis pulmonalis .	2	7	Old colourless cavity in corpus striatum.
215.	F.	15	Pneumonia	2	11	Lymph and small quantity of blood.
216.	F.	55	Diseased heart	2	9	
217.	F.	47	Phthisis pulmonalis .	2	12	
218.	F.	36	Tetanus	2	13	
219.	M.	57	Phthisis pulmonalis .	3	4	
220.	M.	52	Apoplexy	2	14	
221.	M.	65	Diseased rectum . . .	2	13	
222.	F.	80	Diseased heart	2	12	
223.	M.	32	Phthisis; diseased heart.	2	13	
224.	F.	15m	Pneumonia	1	15	
225.	F.	80	Diseased duodenum . .	2	13	Fluid.
226.	F.	76	Chronic arachnitis . .	2	9	Much fluid; congestion.
227.	F.	1m.	Enteritis	0	12	No congestion.
228.	M.	30	Pneumonia; simple apoplexy.	2	11	Great congestion; little fluid.
229.	F.	70	Diseased heart	2	15	Hypertrophy; little blood; fluid.
230.	M.	78	Carcinoma hepatis . .	2	14	Fluid.
231.	F.	79	Ramollissement of brain.	2	5	Much fluid.
232.	F.	3	Pneumonia; simple apoplexy.	2	5	Congestion; little fluid.
233.	F.	75	Ramollissement of brain.	2	6	Fluid.
234.	F.	12	Pneumonia	2	12	Congestion; fluid.
235.	F.	18m	Pneumonia	2	1	Natural.
236.	M.	36	Delirium tremens . . .	3	0	Great congestion; fluid.
237.	M.	71	Wound of finger; pneumonia.	3	5	Fluid; high congestion.
238.	M.	79	Erysipelas	2	15	
239.	F.	55	Apoplexy	2	8	Fungoid disease of thalamus; fluid.
240.	F.	29	Inflammation of brain	2	14	Effusion; highly vascular.
241.	M.	72	Pneumonia	2	11	High congestion; fluid.
242.	M.	70	(Cut-throat)	2	7	Congestion; fluids.
243.	M.	73	Cancer of stomach . .	2	10	Much fluid; blood-vessels dilated, but bloodless.
244.	M.	74	Abscess of kidney . . .	2	13	Much fluid.

No.	Sex	Age	Disease occasioning death.	Weight of the brain.	Other pathological appearances.
		yrs.		lbs. oz.	
245.	F.	20	Ulcer of stomach . .	3 6	Hypertrophy.
246.	M.	59	Phthisis pulmonalis .	2 5	Fluid; ramollissement cured.
247.	M.	5 m.	Pneumonia	1 8	High congestion.
248.	M.	52	Pneumonia	3 2	High congestion; fluid; brain soft.
249.	F.	23	Phthisis pulmonalis .	2 3	Slight fluid.
250.	F.	3½	Pneumonia	2 4	Highly congested.
251.	M.	68	Ramollissement of brain.	2 12	Bloodless; ramollissement; fluid.
252.	M.	39	Phthisis pulmonalis .	2 14	Congestion; fluids.
253.	M.	58	Apoplexy	3 2	Ramollissement; inflammation.

TABLE II.

Shewing the weight of the brain in seven cases below one year old.

Age.	Weight of brain.
	lbs. oz.
14 days	0 14
28 days	0 12
5 months	1 8
5 months	1 2
5 months	1 8
9 months	1 9
9 months	1 10

In the last column of Table I., a few of the appearances observed on dissection, and which might possibly influence the weight of the brain, are shortly mentioned. Where the words “fluid” and “congestion” are used simply, they will be understood to mean in a small degree, and such as might not, in most cases, have prevented the brain being considered healthy. The majority of the cases are of course taken from

brains of persons in whom diseases not cerebral, of various degrees and forms, existed, as will be seen in Table I. I am well aware of the imperfections of this Table, but perhaps they are imperfections which necessarily attach to the subject; however, I hope it may prove a useful statistical document.

In Table No. III., I have attempted to ascertain the average weight of the brains in the preceding Table, No. I., according to a scale of the ages of the subjects, excluding six cases of hypertrophy, without at present referring to the diseases which occasioned death, or to the morbid state or otherwise of the brain.

It will be observed that the number of brains examined in the several divisions of this Table varies very much, and this must be considered one of its imperfections.

The inference from this Table is, that the average weight of the brain goes on increasing from one year old to twenty; between twenty and thirty, there is a slight decrease in the average; afterwards it increases and arrives at the maximum between forty and fifty; after fifty, to old age, the brain gradually decreases in weight. Many of the results differ from those of preceding observers.

TABLE III.

Shewing the average weight of the brains in Table I., arranged on a scale according to the age of the subjects.

Age.	Number weighed.	Heaviest brain.	Lightest brain.	Average.
yrs. yrs. 1 to 2	9	lbs. oz. 2 5	lbs. oz. 1 13	lbs. oz. 2 1 nearly
2 to 3	3	2 9	2 1	2 $4\frac{1}{3}$
3 to 4	5	2 9	2 4	2 $6\frac{1}{5}$
4 to 5	3	2 13	2 3	2 7
5 to 10	9	3 1	2 3	2 $8\frac{4}{9}$
10 to 15	14	3 8	1 11	2 $12\frac{4}{14}$
15 to 20	3	2 15	2 11	2 13
20 to 30	19	3 5	2 3	2 $12\frac{1}{7}\frac{1}{9}$
30 to 40	22	3 6	2 3	2 $13\frac{1}{2}\frac{4}{2}$
40 to 50	29	3 11	2 4	2 $14\frac{2}{2}\frac{0}{9}$
50 to 60	35	3 7	2 5	2 $13\frac{2}{3}\frac{5}{5}$
60 to 70	42	3 8	2 4	2 $11\frac{3}{3}\frac{4}{2}$
70 and upwards }	44	3 10	2 0	2 $10\frac{5}{4}\frac{4}{4}$

In the following Table, I have *selected* a few cases, with the age, disease occasioning death, and the weight, the brain being *perfectly healthy*.

TABLE IV.

Healthy brains.

No.	Sex.	Age.	Disease occasioning death.	Weight of brain.	
		yrs.		lbs.	oz.
1	F.	11	Phthisis pulmonalis.	2	6
2	F.	16	Erysipelas ; pneumonia	2	15
3	M.	21	Diseased heart, liver, intestines.	2	14
4	F.	22	Abscess of liver.	2	9
5	F.	27	Pneumonia.	2	12
6	F.	30	Phthisis pulmonalis.	2	4
7	F.	31	Diseased heart.	2	14
8	F.	33	Phthisis pulmonalis.	2	13
9	F.	36	Chronic enteritis.	2	12
10	F.	45	Phthisis pulmonalis.	2	14
11	M.	45	Pericarditis ; dropsy.	3	6
12	F.	50	Phthisis pulmonalis.	2	10
13	M.	56	Phthisis pulmonalis ; fungoid kidney.	2	12
14	F.	69	Carcinoma ventriculi.	2	13

From this limited Table, it appears the weight of eight out of twelve adult healthy brains approaches very nearly to uniformity.

Troy weight was used by Sir William Hamilton in his observations, and he found that the average weight of the adult male brain was 3 lbs. 8 oz., that of the female 3 lbs. 4 oz. One pound avoirdupois being equal to 14 oz. 11 dwts. $15\frac{1}{2}$ grs. troy, and as most of the brains in Table IV. were females, the weight very nearly corresponds with Sir William's conclusions.

I subjoin a short account of several cases in which the brain was found unusually large and heavy from various causes, but which did not constitute hypertrophy. The brain in most of the cases was greatly increased in weight by the enormous quantity of blood contained in the dilated vessels.

I. A boy, aged 13, died delirious, on the fifth day of small-pox. On examining the brain, the tunica arachnoidea was found thickened throughout. Fluid in the sub-arachnoid tissue, and 4 oz. in the ventricles. The substance of the brain was firm throughout ; weight, 3 lbs. 8 oz.

II. A boy, æt. 6, had a smart attack of scarlet fever ; at first he appeared doing well, was afterwards delirious for some days, and then sank rapidly. The brain was found natural, excepting a

small quantity of fluid ; weight, 3 lbs. 1 oz. Extensive pneumonia and hepatization of lungs.

III. A girl, æt. 21 months, had just recovered from the measles with pneumonia ; a second attack of pneumonia appeared, and the child rapidly sank. Brain healthy ; weight, 2 lbs. 5 oz.

IV. A boy, æt. 18 months. Admitted five weeks ago with measles : he is now much emaciated, and diarrhœa continues ; latterly he has had frequent fits ; pupils remarkably dilated during the fit. Dissection.—Fluid was found in the membranes and ventricles. Softening of fornix and testes. Pineal gland twice its usual size. Weight, 2 lbs. 3 oz.

V. A man, æt. 74, was much relieved, three months ago, from general dropsy depending on diseased heart, by bleeding and diuretics. He was again brought to the Infirmary in an extremely depressed state, and died before he could be put to bed. High congestion in the brain, and effusion in the sub-arachnoid tissue. Arteries tortuous and ossified. Brain firm ; weighed 3 lbs. 10 oz.

VI. A boy, æt. 12, who died of pneumonia ; brain weighed 3 lbs. 6 oz.

VII. A woman, æt. 63. Consolidation of the lungs from repeated attacks of pneumonia : emphysema. The brain was found very firm, great con-

gestion throughout, and the veins on the surface distended with fluid blood; weight, 3 lbs. 8 oz.

VIII. A woman, æt. 60, in whom were found remains of severe pleuritic attacks. Œdema and emphysema of the lungs; the brain weighed 3 lbs. 2 oz.

IX. A girl, æt. 2. A sickly emaciated child, with continued diarrhœa; convulsions twenty-four hours before death; contraction of flexors of the thumbs. The brain was highly loaded with blood, of a pink colour: the ventricles dilated; weight, 2 lbs. 1 oz.

X. A boy, æt. 1, emaciated with continued diarrhœa, died in a convulsion fit. A large quantity of fluid in the sub-arachnoid tissue, and in the substance of the brain; weight, 2 lbs."

XI. A girl, æt. 8, subject to diarrhœa, died from peritonitis. Brain very firm, weighed 2 lbs. 13 oz.

XII. A girl, æt. $3\frac{1}{2}$. Admitted emaciated from mesenteric disease. Attacked with malignant cholera, and died in six days. Brain large, weighing 2 lbs. 9 oz. Membranes thin and dry. Pia mater adherent. Gray matter, very soft, and apparently in greater quantity than usual, very vascular, and mottled in the central parts.

XIII. A boy, æt. 3. Hooping-cough; died in convulsions. Surface of the brain flattened; blood-vessels very turgid; the brain weighed 2 lbs. 9 oz.

XIV. A boy, æt. 14. Phthisis pulmonalis; much effusion from the membranes and into the ventricles; weight, 2 lbs. 14 oz.

XV. A girl, æt. 2. Inflammation of pia mater; pneumonia; sero-purulent effusion; weight, 2 lbs. 9 oz.

XVI. A girl, æt. 4. Inflammation of pia mater; pneumonia; sero-purulent effusion; weight, 2 lbs. 13 oz.

II.

Atrophy of the Brain.

Every one familiar with the dissection of the brain, must frequently have noticed a marked diminution in the magnitude of the brain, in persons of advanced life, whether the subjects have suffered apoplexy, ramollissement, or any other disease of the brain; or in cases where no evidence of previous disease of the brain appears from a careful examination, or from the history of the patient. It is equally a matter of observation that in young persons, and those in the meridian of life, who have suffered from long continued emaciating diseases, the brain has very frequently undergone a degree of wasting in some re-

spects corresponding with that of the other parts of the body. In this state the brain has suffered a general or perhaps uniform wasting in all its parts, in both the gray and white matter.

The marks by which this state of wasting may be known are, a particular collapse or shrinking together of the convolutions when the horizontal section is made, so as to cause the white matter to appear depressed, and not to present the even surface observed in a firm and healthy brain;—a quantity of serous fluid may be squeezed out of the interstitial tissue of the brain;—a stringiness of the substance, arising from the absorption of the pulpy matter, and the probable thickening of the filamentous tissue*; flaccidity of the brain in some instances; a dilated state of the blood-vessels, whether empty or filled with blood; the presence of serous fluids in the ventricles or membranes, and hypertrophy of the bones of the skull.

In partial atrophy we sometimes observe one hemisphere of the cerebrum to be very much less than its fellow; one lobe of the cerebellum also to be diminished in comparison with the other; sometimes parts of the gray matter covering the convolutions are dwindled. Very frequent instances of partial

* Dr. Baillie has remarked that the brain is sometimes tougher and more elastic than usual, and that under these circumstances the ventricles were enlarged in size and full of water. *Morbid Anatomy*, p. 434.

atrophy are met with in the corpora striata and in the thalami. The natural rounded form of the corpus striatum is rendered much flatter, and there are often furrows in it; the extent of its surface which appears in the ventricle is much contracted, and on cutting into it, the gray matter appears loose, and holes are frequently observed. The thalami are sometimes much wasted, the contiguous sides are widely separated, and instead of the perpendicular line of the lateral face of these bodies, it appears scooped or hollowed out; their rounded or upper surface is either flat or hollowed, and the ventricular margin presents a ridge instead of the usual convexity. One of the thalami, or one of the corpora striata, is sometimes atrophied, whilst its fellow retains its normal state, or is hypertrophied.

The blunted feelings, loss of memory, diminished mental power, feeble movements, muscular tremors, and probably impaired energy in the actions of the thoracic and abdominal viscera, may, I think, be accounted symptoms of cerebral atrophy in aged persons. Possibly the wasting of the brain in phthisis pulmonalis, and other emaciating diseases, may have some part in producing the muscular weakness, the diminished energy in all the functions of the system, and the general emaciation.

The chasm occasioned by the atrophied state of the brain, we observe to be sometimes filled up by serous fluid, and by deposits of bone on the skull: and the

opinion is highly probable, that this excess of fluid and of bone is placed there to supply the deficiency.

The hypertrophy which takes place in the bones of the cranium is very frequently confined to the inner surface of the os frontis; in other cases it is more general. One of the specimens on the table was taken from a subject who died of diseased heart, dropsy, &c., in whom a quantity of serous fluid was found in the brain, and the interior of the cranium was generally covered with an adventitious deposit of bone. This deposit, in most instances that I have observed, is placed on the inner table of the skull: in other instances, the deposition appears to take place in the diploe, and to expand the tables of the bone.

The following are cases in which the brain was much diminished in size, either generally or partially.

CASE I.

Apoplexy; Hypertrophy of Os Frontis; Atrophy of the Brain.

Edward Burgess, æt. 70. About four months ago he was seized with apoplexy, attended with hemiplegia of right side, and loss of speech. Since the attack, he has never recovered the use of the paralysed side, but he has had occasional variations of sensation and motion. He soon shewed signs of childishness, which increased nearly to fatuity. He

made frequent attempts to speak, and sometimes he succeeded in uttering a word or two.

Inspection, Jan. 13, 1835, ten hours after death.
Head.—The cranium was thickened by a deposition on the inside of the os frontis, so as to diminish the capacity of the frontal region of the cavity: the corresponding parts of the anterior lobes of the cerebrum were diminished in size and flattened. There was considerable opacity of the membranes, and effusion into the ventricles and membranes. The right corpus striatum was flaccid and shrivelled, and of a reddish brown colour. Both the thalami were atrophied to about half their natural size. The remains of an apoplectic cyst were found in the left corpus striatum. Weight of the brain, 2 lbs. 4 oz.

Thorax.—Right lung adhered firmly. Heart flabby but healthy.

This brain weighed 2 lbs. 4 oz.: the brain of a child two years old, examined the same day, who died of pneumonia, weighed 2 lbs. 3 oz.

Remarks.—In this case, the weight of the brain was six ounces and a half less than the average of forty-four brains of persons upwards of seventy years of age, detailed in a preceding Table. The patient was four months under observation; and it is most probable that from the time of the apoplectic attack

the wasting of the brain began, and that it was progressive, and evidenced by his increasing childishness and approach to fatuity. The atrophy of the anterior lobes of the cerebrum, with its consequent hypertrophy of the os frontis, may account for the mental declension. The apoplectic cyst in the left corpus striatum corresponds with the right hemiplegia. Both the thalami presented remarkable instances of atrophy of these bodies.

CASE II.

Atrophy of the Brain ; Ramollissement ; Holes in the Brain ; diseased Blood-vessels.

Joseph Lilley, æt. 91, suffered an apoplectic attack, arising from ramollissement, which soon carried him off.

Inspection, fifteen hours after death, Sept. 12, 1834. Brain.—A large quantity of fluid was contained in the dilated ventricles and between the membranes. The membranes presented various degrees of opacity and toughness: a large, softened spot was noticed in the right hemisphere. The thalami were much shrunk: there was an old deposit in the right corpus striatum, and many holes in various parts of the brain. The arteries of the brain were all more or less ossified, and other parts of the arterial system partook of this state. Weight, 2 lbs. 6 oz.

Remarks.—On the same day, the body of a boy, æt. 14, who died from pulmonary tubercles, was examined. He was admitted in a dying state, a mere skeleton; drowsy, and affected with diarrhœa. Brain loaded with blood, membranes opaque, and fluid beneath. Weight, 2 lbs. 13 oz. Thus the weight of the boy's brain, æt. 14, was seven oz. heavier than that of the old man, æt. 91 years. In this case the atrophy of the brain appears to be connected with an old apoplectic cyst in the right corpus striatum, the relic of a former attack. The thalami were much shrunk, in the way I have described at the commencement of the paper. The softening in the right hemisphere had proceeded to a considerable extent, and occasioned the fatal attack: traces of old ramollissement are denoted by the holes observed in the brain, which were probably connected with the yellow deposit in the corpus striatum.

CASE III.

*Phthisis Pulmonalis; Hypertrophy of the Cranium;
Atrophy of the Brain.*

Jane Hacket, æt. 41, admitted in the last stage of exhaustion from pulmonary tubercles. She had slight diarrhœa, which was easily checked; and was greatly emaciated. She had no head symptoms.

Inspection, forty-four hours after death, May 12.
Head.—Cranium hypertrophied, in front especially,

but also over the whole calvaria. Three oz. of fluid were found in the ventricles, and a very large quantity in the membranes, in some parts of a dusky colour. The vessels of the membranes were dilated, and those of the brain highly congested. The substance was soft from interstitial fluid, otherwise it was natural. Weight, 2 lbs. 14 oz.

Thorax.—Lungs: cavity at the upper part of right lung the size of an orange. The lungs extensively tuberculated, and containing many cavities. Heart small, atrophied.

Abdomen.—Stomach thinner than usual. No ulcerations in the intestines. Liver large, and going on to the granular form: slightly fat. Right kidney healthy.

Remarks.—The thoracic viscera were removed before the brain was dissected, but this had no effect in unloading the vessels of the brain.

The hypertrophy of the skull appears to be in the diploc. This case is introduced as an example of copious serous effusion into the membranes, ventricles, and substance of the brain, in a case of phthisis pulmonalis attended with great emaciation, the patient having had no head symptoms. The quantity of fluid, and the thickness of the cranium, must have encroached upon the cavity in a volume equal to from six to eight fluid-ounces; and the brain, otherwise

healthy, must have diminished in bulk to the same amount.

CASE IV.

Pertussis; Pneumonia; Scrofulous Tumours in the Brain, Lungs, Liver, &c.; Atrophy of the Cerebellum.

Thomas M'Key, æt. one year and a half. This child was admitted with whooping-cough: pneumonia soon appeared, and the brain subsequently became embarrassed. He lingered several days without any marked increase of cerebral symptoms.

Inspection, May 21, seventeen hours after death.
Head.—Blood-vessels of the membranes and substance of the brain loaded. Fluid between the membranes, and four oz. in ventricles. A scrofulous tubercle was found near the surface of left middle lobe, about the size of a filbert: another was found, about the same size, attached to the dura mater, a little above the tentorium, on the right side. The left lobe of the cerebellum appeared to be about its natural size, the right only one-third its ordinary size: in the occiput the depressions corresponded with the relative size of the lobes of the cerebellum. The tumours were cheese-like, of a lemon-yellow colour, and beginning to soften. Weight, 2 lbs. 4 oz.

Thorax.—Heart large for the age. Lungs: a tumour, similar to those in the head, the size of a

walnut, at the upper part of the right lung; in other parts, ordinary pulmonary tubercles. Traces of lobular pneumonia, with whiteness from emphysema.

Abdomen.—Large tubercular masses, of the same colour and consistence, in the mesentery, and in other absorbents of the cavity. In the liver, numerous small tubercular masses.

Remarks.—From the diminished cavity in the right side of the occipital bone, it is probable that the corresponding lobe of the cerebellum was originally deficient in size, or that it had ceased to grow in proportion to the other lobe, at an early period after birth.

In the model before the Society, which was taken from a patient of Mr. Stafford who died from cancer of the face, &c., absorption of the brain and flattening of the convolutions are well shewn. The orbits are almost entirely removed by absorption, and the dura mater is seen increased to three times its usual thickness, stretched across in a right line, and thus pressing upon the anterior lobes of the cerebrum. The pulsatory motion of the brain could be seen on looking into the deep ulcerated cavities of the face.

The following short notices of cases of atrophy of the brain will, I think, illustrate the subject.

I. A man, æt. 73, admitted in an emaciated

and feeble state from diarrhoea and incontinence of urine : he lived three days. The brain contained a large quantity of fluid, and weighed 2 lbs. only.

II. A woman, æt. 71, admitted in a dying state : has been in a very destitute condition. On inspecting the brain, an old apoplectic cyst was found in the corpus striatum of the right side : arteries of the brain diseased ; the ventricles large, and distended with fluid. Weight, 2 lbs. 5 oz.

III. A woman, æt. 79, died from pale ramollissement in the right middle lobe of the cerebrum. A large quantity of fluid was found in the membranes, and eight oz. in the ventricles. Weight, 2 lbs. 5 oz.

On the same day the brain of a child, three years old, who died of pneumonia, was examined ; the vessels of the brain were highly loaded : there was some fluid. Weight, 2 lbs. 5 oz., equal to that of the old woman of 79 years.

IV. A woman, æt. 78, died of extensive ramollissement of the posterior half of the right hemisphere. Weight, 2 lbs. 6 oz.

V. A woman, æt. 75, had an apoplectic attack seven years ago, and was carried off by a repetition of the disease. On examining the brain, traces of the old apoplexy and ramollissement were found. Brain weighed 2 lbs. 6 oz.

On the same day, the body of a girl, *æt.* 12, who died of pneumonia, was examined. The brain was highly loaded, and contained some fluid. Weight, 2 lbs. 12 oz.; six oz. more than the brain of the woman *æt.* 75.

VI. A man, *æt.* 62, whose case is detailed in a former paper, is an instance of atrophy attended with copious effusion into the ventricles and old cysts. Weight, 2 lbs. 6 oz.

VII. Also detailed in a former paper. A woman, *æt.* 67. Copious effusion between the membranes, and eight oz. in the ventricles, attended with an old cyst. The brain appeared fibrous, probably from absorption of the softer parts.

It occasionally happens, that on weighing a brain it is found to be equal to the average weight; but from the great quantity of fluid contained in the ventricles or membranes, atrophy to a great extent has taken place: the three following are cases of this description.

VIII. A man, *æt.* 46, had been in an imbecile state of mind for nine months: he died from erysipelas of the scalp. On examining the brain, a large quantity of fluid was found in the sub-arachnoid tissue: the ventricles contained eight oz. of fluid. The cerebral substance, extending upwards from the

posterior cornu of the left ventricle, had almost entirely disappeared. Weight, 2 lbs. 15 oz.

IX. A girl, aged 6, a very delicate child, had suffered several attacks of hæmoptysis, and died of pulmonary tubercles. Cranium, deep blue. Membranes raised by fluid. A large quantity of fluid in the ventricles. Weight, 2 lbs. 7 oz.

X. A girl, æt. 6, lingered a long time with copious purulent expectoration from tubercles, and became much emaciated. In the brain there was a large quantity of fluid between the membranes and in the ventricles. Weight, 2 lbs. 6 oz.

XI. A man, æt. 60, with phthisis and hemiplegia: in the brain was found the remains of a clot of a rusty colour, in the anterior part of the right hemisphere. Weight, 2 lbs. 5 oz.

On the same day was examined the body of a boy, æt. 14, who died of phthisis: in the brain considerable effusion was found, and the weight was 2 lbs. 14 oz., nine oz. heavier than that of the man æt. 60.

Inferences from the preceding facts and observations.

1. From the short historical sketch it appears that pathological writers have hitherto had a very imper-

fect knowledge of the phenomena connected with hypertrophy of the brain. M. Laennec did not observe the peculiar changes of structure which the brain presents in this affection. Scoutetten notices the greater consistence of the brain. Dance is the first to take much notice of the change of texture, though in his definition he limits the change to a mere addition of molecules. Portal, Otto, and Andral, have added several facts. British pathologists afford but faint indications of an acquaintance with the affection.

2. That cases of hypertrophy of the brain are met with where no change of texture can be discovered, and the enormous size of these brains arises from the mere addition of similar particles.

3. That cases of hypertrophy occur, in which, added to the increased size of the brain, there is a change in the texture of the brain, which has been described as resembling boiled albumen, ground-rice pudding, cream cheese, &c. ; a flattening of the convolutions; little or no blood or serous fluid in the vessels, cavities, or membranes of the brain. That this state of the brain is of a more acute character, and is probably produced more or less rapidly by any causes that excite the brain or its blood-vessels, or that increase general or partial nutrition.

4. That hypertrophy is allied to or connected with apoplectic seizures, either as a precursor, a con-

comitant, or a cause : that in this state of the brain, simple sanguineous apoplexy may be more readily induced, or life may be destroyed by a very small clot of extravasated blood.

I have no doubt that in the dissection of apoplectic brains, many cases of hypertrophy have been entirely overlooked, and the brain has been reported as normal; now, believing that I am correct on this point, I take the liberty of impressing on the minds of medical practitioners the further investigation of this subject, in consequence of its obvious bearing on the practical treatment of apoplexy and other diseases of the brain.

5. That extensive disorganization of the heart and lungs may impede the return of blood from the brain, or so obstruct its circulation as probably to occasion hypertrophy, or enlargement of the brain.

6. It is probable, that in cases of sudden death which on dissection have been attributed to a flaccid state of the heart, angina pectoris, spasm of the heart, &c., hypertrophy of the brain, causing simple sanguineous apoplexy, though unnoticed, may have been the sole cause of death.

7. That in brains that are hypertrophied, both children and adults are sometimes destroyed by active inflammation of the brain, terminating in ramollissement; and also that this affection is frequently

connected with the more slow form of ramollissement in adults, whether arising from inflammation or not.

8. That in some children who, from the size of the head, are suspected to be suffering under hydrocephalus internus, or the disease terminating in the deposition of fluid in the ventricles, it is highly probable that the brain is in a state of hypertrophy.

9. That the brain is sometimes affected partially by hypertrophy, either of one hemisphere, one lobe, or of the corpora striata or thalami.

10. That hypertrophy is confined to the cerebrum; the cerebellum is not so affected.

11. From an extensive series of observations, it appears that the average weight of the brain goes on increasing from 1 year old to 20; between 20 and 30 there is a slight decrease in the average: that afterwards it increases, and arrives at the maximum between 40 and 50; that after 50 to old age the brain gradually decreases in weight.

12. That the brain is sometimes unusually large, not amounting to hypertrophy, in persons dying of various diseases, especially in extensive pneumonia, and other diseases of the lungs and heart; and in these cases the brain is generally very much loaded with blood.

13. That the brain in the advanced periods of life, and in some diseases, is diminished in volume or atrophied, either generally or partially; and that there are certain marks observed in dissection, by which this state of the brain may be known. It is also probable that there are symptoms occurring during life indicating atrophy of the brain.

14. That in phthisis pulmonalis, diseases of the stomach, and other emaciating disorders, the brain also sometimes undergoes a process of wasting.

15. That in cases of atrophy of the brain, the place previously occupied by cerebral substance is supplied by serous fluid, or by deposition of bone; and this deposit of bone frequently takes place on the inner surface of the cranium, sometimes in the diploe.

16. That the cerebellum is subject to atrophy, as well as the cerebrum.

ON THE CURE
OF
RAMOLLISSEMENT
OF THE BRAIN.

By JOHN SIMS, M.D.,
PHYSICIAN TO THE ST. MARY-LE-BONE INFIRMARY.

READ 9TH JUNE, 1835.

Two varieties are principally observed on dissection, in the early stages of ramollissement of the brain: one, of a red colour, chiefly taking place in the gray matter covering the convolutions, or in that of the corpora striata, &c., and not unfrequently in the white matter, when connected with apoplectic extravasation of blood; the other, of a white colour, or sometimes of a pale yellow colour, occupying the white matter of the brain. This frequently occurs in the central parts of the brain of children, and of adults who die of the inflammatory disease termed hydrocephalus acutus; it is also frequently met with in the brains of old people connected with diseased blood-vessels, and other morbid appearances, and is then most probably not an inflammatory affection.

The colour of the red ramollissement appears to arise from the capillary vessels, carrying red blood, being dilated in the softened spots, from extravasation, or from transudation through the coats of the vessels, or probably from all these circumstances taken together.

The colour of the white ramollissement is probably occasioned by the softening taking place in the intensely white part where no red capillaries are seen, as the corpus callosum and the fornix, or in the white matter where red vessels are seen sparingly, it may take place in small medullary patches, at a little distance from these vessels, so as not to endanger their laceration ; or in cases of diseased arteries, the red vessels in patches of the white matter have become ossified, cartilaginous, or obliterated ; or the colour may be influenced by the admixture of lymph or puriform fluid with the softened parts of the white matter.

In examining the brains of persons who have in a former period suffered apoplexy, paralysis, vertigo, loss of feeling or motion, we find generally some or other of the following appearances : cicatrices ; cysts, containing less or more fluid ; also an ochre or fawn-coloured matter, the evidence of former extravasation ; small holes of various sizes, lined by a thin, transparent membrane, and containing serous fluid ; atrophy of the gray and white matter ; small spherical lumps of coagulated blood ; serous fluid in the membranes, the ventricles, and the substance of the brain.

I am inclined to believe the atrophy of the gray matter, whether on the surface or in the central parts of the brain, when a fawn-coloured deposit is connected with the wasted spots, and the numerous small holes in the white matter with yellow deposit, as evidence of the arrest or cure of red ramollissement: and the clean cut cavities in the white matter, and sometimes in the gray matter attached to it, and very often in the gray matter of the corpora striata; the numerous small holes lined by a pale membrane, vascular or not, and containing serous fluid; also the new-bread, or porous cheese appearance, and the small, harder lumps in the white matter, and the general hardening of it, as evidence of the arrest or cure of white ramollissement. In the following pages I shall endeavour to illustrate, and *I trust* to prove, the truth of this position, by several dissections of the brains of persons in whom these appearances were found.

Most of the authors who have written on the pathology of the brain are silent on the subject of the cure of ramollissement; some deny that it ever takes place, and others again have explained some of the phenomena, and very recently Cruveilhier has advanced still further in this inquiry.

M. Lallemand *, at the close of his second letter, relates the dissections of two cases in which he found

* Recherches Anat. Path. sur l'Encephale, &c. Let. II. p. 305.

traces of the cure of ramollissement, the patients having had signs of this affection which had disappeared. The first a girl, æt. 14, in which a portion of the white matter of one hemisphere was *hardened*, and presented the appearance of "*fromage de gruyere*." In the other case, a man æt. 55, there was adhesion between the dura mater, the arachnoid, and the surface of the convolutions, the gray matter being *hardened* like *cartilage* or *scirrhus*.

M. Andral states, that out of 105 persons affected with ramollissement, upwards of sixteen survived the first month, more than ten the second month, seven survived the third month, and two lived for three years. He is almost decided in the opinion, that the disease is uniformly fatal; and then asks the question, "can ramollissement be cured?" He supposes that, in order to answer the question in the affirmative, it is necessary exactly to determine the precise symptoms which distinguish ramollissement from other diseases of the brain, which has not yet been done. Now this mode of reasoning appears to me to be begging the question, and to have nothing to do with the argument; for if we can, by repeated dissections, trace the steps by which nature appears to cure this disease, it is of little moment whether our notions respecting symptoms correspond with these phenomena or not; or in other words, if we can settle the anatomy of the question, we shall be in a more competent state to estimate the value of, or to appropriate the symptoms we observe during life. He

approves of Rostan's declining, from the want of diagnostic symptoms, to give an opinion on this question, and thinks that M. Lallemand has not satisfactorily shewn, that circumscribed induration is any proof of the cure of ramollissement *.

In the article "Aliénation Mentale," in the Dictionnaire de Médecine et de Chirurgie Pratique, M. Foville relates, that in the brains of lunatics he found, on the surface of the convolutions, numerous linear depressions and irregular pittings, leaving in the intervals eminences of different sizes; also many small yellowish lacunæ filled with serous fluid; these last he considers to arise from numerous *small extravasations of blood*†. He proceeds to observe, that he

* "Jusqu'à présent nous avons toujours supposé que le ramollissement des hémisphères cérébraux se terminait d'une manière fatale. Peut-il cependant se terminer d'une manière heureuse? . . . Ce sont des faits de cette nature qui déjà avaient engagé M. Rostan, à ne pas se prononcer sur la question, de savoir si le cerveau, une fois privé de sa consistance normale, peut la recouvrer. Cette réserve nous paraît commandée par l'état actuel de la science, et nous ne croyons pas que M. Lallemand ait suffisamment démontré, par les cas qu'il a cités, que l'induration circonscrite d'un des hémisphères est quelquefois l'indice d'un ramollissement qui a guéri. Ce sont-là de belles recherches à poursuivre, mais qui ne pourront conduire à quelque résultat qu'à la condition que l'on s'efforcera d'abord de perfectionner de plus en plus le diagnostic du ramollissement du cerveau." Clinique Med., Vol. V., p. 589.

† "Ce sont quelquefois des dépressions linéaires, des enfoncemens irreguliers qui laissent dans leur intervalles des bosselures de différens volumes. Il n'est pas rare, dans les cas où

has four or five times met with circular patches from half an inch to an inch, in which there was a complete absence of the gray matter with defined edges, and with a clean, white, and firm base, and lined by a transparent cellular membrane; this alteration he considers as the *consequence of ramollissement**. He mentions another state of the brain, which he says is more rare, and which M. Esquirol had already noticed, in which there is a multitude of *small cavities*, from the size of a millet-seed or hemp-seed to that of a nut, containing a clear fluid with clean and white walls, resembling in some degree a porous cheese: in these holes he has not been able to discover a lining membrane. He then puts the question, whether these cavities have succeeded *numerous bloody extravasations*? This he thinks possible, but admits that he has never been able to find in

la surface des circonvolutions est ainsi bosselée, de trouver dans l'épaisseur de la substance corticale une multitude de petites lacunes jaunâtres remplies d'une sérosité de même couleur; il est bien probable que ces petites lacunes ont succédé aux épanchemens sanguins miliaires que nous avons signalés en parlant des alterations aiguës." p. 637.

* "Je crois qu'il faut considerer comme *suite* de ramollissemens partiels de cette espece un alteration que j'ai rencontré quatre ou cinq fois, et qui consiste dans l'absence complète de la substance grise dans une etendue circulaire variable de la grandeur d'un demi-pouce à un pouce. Les bords de cette perte de substance sont taillés presqu'à pic; le fond en est lisse, blanc, ferme, et ne semble pas autre chose que la portion fibreuse de la circonvolution. La membrane celluleuse qui la tapisse est aussi transparente, aussi fine que celles des ventricules." p. 540.

them the yellow rusty colour which even ancient apoplectic cysts so often present*.

I hope in the sequel to make it appear that most if not all these appearances are to be considered as traces of the process employed by nature in arresting or curing white or red ramollissement.

Dr. Carswell states that blood effused into the brain may be absorbed and the wound cicatrized, and that softened cerebral substance may also be absorbed; but he says, "we have never seen a case in which its removal was followed by cicatrization." He goes on to say, "the first change which indicates the removal of the softened cerebral substance is the formation of an excavation, containing a milky,

* "Une autre alteration plus rare, que M. Esquirol a déjà remarquée, est la presence dans le cerveau d'une multitude de petites cavités capables de loger un grain de millet, de chénevis, quelquefois même une noisette.

"Dans tous les cas de cette espèce que j'ai rencontré, le liquide contenu était aussi limpide que de l'eau, et les parois de ces petites cavités parfaitement lisses et blanches.

"Une section pratiquée dans un cerveau ainsi altéré, présenté une grande ressemblance avec l'aspect de certaines fromages. Je n'ai pu parvenir a separer de ces cavités une membrane distincte, quoiqu'on en puisse raisonnablement supposer l'existence.

"Ces petites cavités, ces petites collections sereuses, ont elles succédé à de nombreuses epanchemens sanguins? Cela est possible; mais jamais elles ne m'ont offert cette couleur jaunâtre, rouille clair, que des kystes apoplectiques, même anciens, offrent si souvent." p. 544.

grayish, reddish, or yellowish fluid matter, with sometimes a small quantity of loose, cellular tissue. By and bye this matter becomes fluid and limpid, and the cellular tissue is found transformed into a serous membrane which lines the surface of the excavation." Dr. C. has met with three cases, and they occurred in persons under forty years of age: the cases are so slightly alluded to, that it is difficult properly to appreciate their character*.

M. Cruveilhier, in the number of his "Anatomie Pathologique" just published, has investigated the subject of the cure of ramollissement more satisfactorily than any preceding writer. He relates several instances of the yellow discoloration of the convolutions connected with irregular depression and loss of substance in the gray matter. The various shades of yellow discoloration, he thinks, are the indelible marks of previous extravasation from capillary apoplexy. After describing the several forms of softening, he observes, "On peut guérir d'un ramollissement. Mais un ramollissement antérieurement éprouvé en amène presque toujours une second, un troisième. Comme la possibilité de la guérison des ramollissement de cerveau a été contestée, je crois devoir citer *un fait bien positif à l'appui de cette proposition.*"†

* Cyclopædia of Practical Medicine, Article "Softening of Organs." p. 6.

† Anatomie Pathologique, Maladies du Cerveau, No. XX., p. 9. This number was published in Paris, May 1st, and copies appeared in London about ten days after.

In his remarks on this case, he alludes to the loss of substance, with yellow cicatrices in the gray matter, and to the small pisiform holes, sometimes without discoloration, in the white matter, as traces of the cure of ramollissement*.

Instances of the cure of ramollissement are frequently to be met with in dissecting; I believe they have been described by pathologists as extraordinary excavations, ulceration, or traces of apoplectic extravasation of blood. Cases of this kind might, probably, be taken indiscriminately from any author of

* “ Le mode de cicatrization de la substance blanche ramollie consiste quelquefois dans de la cellulose infiltrée d’une bouillie claire à la manière du lait de chaux; que le mode de cicatrization de la substance grise ramollie consiste dans des pertes de substance avec cicatrice jaunâtre.”

“ Il me paraît probable que les cicatrices des circonvolutions, si fréquentes chez les vieillards, que les petits foyers pisiformes presque toujours sans coloration manifeste que l’on rencontre si souvent au milieu de la substance blanche, sont la suite du ramollissement du cerveau nous voyons souvent à la Salpêtrière; des femmes qui éprouvent de temps à autre des étourdissements, la perte momentanée de la parole, un engourdissement temporaire de telle ou telle partie du corps, dont les facultés s’affaiblissent à chaque attaque, jusqu’à ce qu’enfin elles tombent dans l’idiotie, et qui finissent par succomber à un ramollissement considérable ou à une attaque d’apoplexie: on trouve à l’ouverture une multitude de cicatrices ou cicatricules avec perte de substance des circonvolutions avec coloration jaunâtre, brun-jaunâtre, peau de chamois, dont chacune répond probablement à une petite attaque, laquelle ne serait autre chose qu’un ramollissement très circonscrit.” P. 10.

acknowledged reputation on the pathology of the brain.

Case 121*, in Dr. Bright's work, I take to be one of ramollissement cured, and Case 145†, to be one of ramollissement in the progress of cure, and not apoplectic extravasation.

* "Medical Reports: Diseases of the Brain. Hemiplegia, connected with serous effusion into the ventricles, and a superficial excavation on one of the convolutions."

"*Sectio.*—And on the left hemisphere, close to the temple, one of the convolutions was excavated to the extent and depth of half a hazel nut; it looked *clean*, and more like a cavity which had contained purulent fluid than like a recent ulcer. Eleven ounces of fluid in the cavities."

"*Remarks.*—It is not quite evident to what cause we are to ascribe excavations of this kind; not improbably they are the results of laceration and injury of the brain, followed by absorption of the injured parts." Page 253.

† "Hemiplegia on the left side, with cerebral injury on the same side."

"*Sectio.*—Membranes stripped easily from convolutions, except on the lateral and outer part of left hemisphere; to which they were glued by a thin, opake, yellow flake of deposit, like fibrine. Immediately below this adhesion, and extending to the middle of the corpus striatum, was an opaque portion of brain, considerably harder than the brain itself; plainly shewing in its centre that it was *the scar of an apoplectic cyst*, surrounded by hardened parietes. The cavity was scarcely so large as a French bean, containing a *little softened curd-like substance*. The derangement from the injury evidently extended from the middle of the corpus striatum to the surface of the middle lobe." Page 307.

M. Scoutetten relates two cases which he describes as ulceration of the gray matter on the surface of the brain. He justly refers the symptoms to inflammation of the membranes, the one acute, the other chronic; and I think we may go a step further, and say that they were cases, not of ulceration, but of inflammatory ramollissement; the first in the progress of cure, from the dry and hard state of the surface of the *ulcer* and the sound state of the brain beneath. Of the second case there can be no doubt, and the author appears very nearly arriving at the same opinion, when he asks, “*Comment se fait-il que le tissu cérébral sous-jacent à l’ulcération offrant les caractères de ramollissement?*” &c. This case appears not so far advanced, and the subject was of a bad constitution, and probably slow in setting up the restorative process*.

I shall proceed to relate several cases of ramollissement of the brain, in which I conceive traces of the arrest or cure of this disease are evident.

During the last two or three years, I have often pointed out the appearances in the brain which I consider to be traces of the arrest or cure of ramollissement of the brain, in the presence of the medical officers of the Infirmary and other professional gentlemen. Mr. Hutchinson, of Welbeck Street, at the time he was House-Surgeon of the Infirmary, made

* Archives Générales de Médecine, Vol. VII., p. 31.

several of the dissections of the brain, and took notes, at my request, of many of the cases contained in this and the two preceding papers.

CASE I.

Recent Ramollissement-rouge on the Surface; Traces of Ramollissement cured in the central Parts.

Mary Green, æt. 60, admitted with symptoms of gastro-enteritis, great tenderness of abdomen, and constant vomiting, which the remedies used did not relieve. She continued to decline until within two days of her death, when slight delirium came on, succeeded by coma. She appeared to have lost her sight, and during the last thirty-six hours she was pointing her fingers forwards, and appeared to be intently looking at them. She had been a patient in the Infirmary several months ago with diarrhœa, from which she was considerably relieved.

Inspection, May 9th, 1835, twenty-five hours after death.—Head. High congestion of the veins of the surface, which were beautifully tortuous. The blood-vessels of the brain were loaded throughout. In the cavity of the arachnoid there was extravasation, and coagulum on some parts of the brain, in small thin layers. It might appear doubtful whether this was a post-mortem appearance, or one which occurred in the last moments of existence; but it is highly probable that it was connected with some spots of red ramollissement which appeared on the inferior part of

both posterior lobes of the cerebrum. This was small in extent, and little more than a third or a half the depth of the gray matter, which was red from torn vessels and slight extravasation, so as to present the appearance of being worm-eaten. The arachnoid and pia mater adhered to the brain partially at these points. There was a fawn-coloured hole, the size of a pea, in the right thalamus. In the gray matter of the left corpus striatum there was a small cavity, with fawn-coloured lining, and around it were several small holes, without fawn-coloured deposit. There did not appear to be any holes in the medullary matter. Effusion of serous fluid in the sub-arachnoid tissue, of a gray colour. Four ounces of fluid in the ventricles, of old standing. Weight, 2 lbs. 4 oz.

Thorax.—Several cicatrices of old cavities in the upper part of the lungs, one, containing gritty matter, the size of a marble. Heart: globular hypertrophy, with contraction of left ventricle: dilatation of right auricle and ventricle.

Abdomen.—Stomach: a portion was of a very dark colour, the remains of chronic gastritis. Liver: pale, surface contracted in places, and considerable deposit of cartilage. Small intestine: ulcerations, some of which were healed: small granules on the peritoneum. Kidneys: granular; small.

Remarks.—In this patient's brain there appear to be traces of ramollissement in different stages of

cure. In the softened spots on the surface of the posterior lobes of the hemispheres, absorption had taken place, and adhesion between the pia mater, arachnoid, and brain. The several small holes without discoloration around the larger cavity, lined by a fawn-coloured membrane in the gray matter of the left corpus striatum, appear to me to attest the pre-existence of a softened state of the brain surrounding an extravasated clot, and that these cavities are the traces of its arrest and cure.

CASE II.

Several attacks of Paralysis; Ramollissement; Holes in the Brain; spherical Lumps of coagulated Blood.

Mrs. A. S., æt. 50, has latterly suffered much from anxiety and fatigue, occasioned by severe domestic affliction.

Nov. 22d, 1831. Complains of a sensation of uneasiness in her head, not amounting to pain: head cool. She appears to have lost the control over the muscles of the voice, and cannot pronounce some letters, and most of her words are spoken thickly. She protrudes the tongue properly; she has no paralysis of the face, and her intellectual faculties appear entire. Tongue loaded. Pulse 100, sharp, and contracted. Catamenia have ceased about three months ago.

On the 18th, when visiting one of her daughters, she mentioned to me a sensation, which she described as irritation or nervous uneasiness in her head, attended with floating specks, which had existed for some time, but had not forcibly attracted her attention. She exerted herself very much on that day, and on the following this affection of the tongue was first noticed.

Dec. 1. When all her family were from home, after fatiguing herself with dressing her hair, she was suddenly seized with great nervous excitement and alarm, and experienced a change of sensation in her left hand and a dragging of her left leg.

I saw her on the 2d. Her head was free from pain, but her mind exceedingly excited. She complains of things feeling hot and rough to the left hand, without loss of the power of moving it. On trying to walk, her left leg appears to slip to the right side, and she walks very feebly. Pulse quick, but rather feeble.

Her symptoms very soon improved; the sensation in her hand, and the power of moving her leg, gradually returned to nearly their natural state: her nervous agitation occasionally appeared, and at one time it bordered on incoherence.

On the 1st of April, 1832, she had another attack. I saw her on the 3d, when her articulation was very

indistinct ; left eye protruding ; left angle of the mouth drawn down ; diminished power of moving the left upper extremity, particularly the fore-arm, with very feeble power of grasping ; no loss of sensation in the limb ; no impediment in walking. Pulse small, sharp, and quick ; heart beat with much labour over a large surface :—(probable hypertrophy, with contracted cavity of left ventricle.) Her general manner is altered, and her understanding and feelings appear to have sustained a shock by this attack. She recovered from some of her symptoms, but the paralysis of the left arm remained.

During the succeeding eighteen months she suffered several attacks of more or less severity, and of a character similar to those I have described ; in one of which the left leg was again paralyzed, which was never recovered. Her understanding, which had been excellent, gradually became enfeebled, and her feelings, previously very acute and susceptible, were in some measure blunted : these circumstances were, however, such as could only be considered a slight approach to childishness. Her appetite and strength declined, and she was much reduced in flesh. She died in the beginning of 1834.

Jan. 22. Inspection, the day after her death.—Head. Skull hard, with a thick os frontis. The arachnoid and velum interpositum were opaque and of a light slate colour : there was some fluid between the membranes, and from four to six ounces in the ven-

tricles. There was an old fawn-coloured deposit in the left hemisphere of the cerebrum: the thalamus of the right side was softened. The blood-vessels were thickened with white deposit. Many small holes were observed, appearing like worm-eaten cavities, in both hemispheres of the cerebrum; some were also found in the cerebellum; they were of various sizes, some spherical, and others of an irregular shape; some were quite clean, and not at all discoloured, especially in the white matter; others were lined by a light fawn-coloured membrane. Several small black spherical bodies were observed, much resembling melanotic matter, in two or three places: they were afterwards found to be portions of coagulated blood inclosed in a membrane; the surrounding white matter was not tinged by the blood. The substance of the cerebrum, with the exception of the right thalamus, was harder than usual.

Thorax.—Hypertrophy of left ventricle of the heart. Other viscera examined, natural.

Remarks.—From the symptoms detailed in the preceding history, we may observe, that the patient nearly recovered from the first paralytic seizure, when, at the end of four months, a second occurred, of a more severe character; and that some of the symptoms of this and the subsequent ones were partially removed. The various holes found in different parts of the cerebrum and cerebellum, the fluid ef-

fused, and the hardening of the cerebrum, are traces of previous disease in the organ, which I take to have been ramollissement without extravasation, excepting in the holes where yellow matter was found. I think this is the more probable, if not amounting to proof, from the softened state of the right thalamus, the diseased part producing the increasing and permanent palsy of the left arm. The holes with yellow colouring are traces of extravasation, added to the softening. The thickened os frontis, the effused blood, the various cavities in the brain, appear to me to be connected with the decay of intellect and the obtuseness of feeling observed in a person previously remarkable for intelligence and sensibility.

I am at a loss to account for the small spherical portions of coagulated blood, unless the following be a satisfactory solution. They were lined by a fine membrane, and the surrounding portion of brain was untinged and apparently uninjured. It is probable, that portions of the brain being softened, admitted of the dilatation of some of the blood-vessels, and a deposit of blood in the form of the coagulum of an aneurism; that the membrane lining the cavity in which these spherical coagula were found was the coats of the blood-vessel; and that, consequently, the substance of the brain was not injured by laceration, as in ordinary extravasation. It is also not improbable that some of the smaller, clean, spherical holes in the white matter might be produced in this

way: the coagulum would most likely be entirely absorbed in process of time, and leave no trace of yellow matter behind it, in consequence of the substance of the brain being uninjured.

In a case which occurred a few days ago, several of these black spherical spots of coagulated blood were observed.

CASE III.

Richard Clayton, æt. 58: dead twelve hours. About ten days ago he had an apoplectic fit, which was reported to be his second attack: violent delirium came on, and he gradually sank.

On examining his brain, the arachnoid was milky; the membranes almost bloodless: some fluid was found in the membranes and in the ventricles. The dura mater was streaked with fawn-coloured deposit. There were several black, spherical spots of extravasated blood on the surface of the convolutions, in one of crura cerebri, and in various other parts of the cerebrum. The right corpus striatum was softened, with a fawn-coloured hole, and there was one also on the right side of the tuber annulare.

CASE IV.

Ramollissement; three Cavities resembling old Apoplectic Cysts; Holes in the white Matter.

Thomas Valley, æt. 70. Admitted Sept. 3d,

having suffered an attack of paralysis, affecting the left arm only, on the preceding day. He was reported to have had no head symptoms previously to this attack, and to be in ordinary health. His forearm became from day to day gradually drawn up, and bent upon the arm, and any attempt to extend the limb occasioned great pain apparently along the course of the nerves. His skin was flabby and presented a dingy or dirty coloured appearance, which I have observed in another instance of ramollissement. He became gradually enfeebled both in body and mind, and a large slough formed on the sacrum. He died Oct. 23d.

Inspection, nine hours after death.—Head. The membranes of the brain were opaque, the opaque parts being thicker in some spots than in others. There was a deposit, almost amounting to cartilage, extending over the longitudinal sinus. The membranes and ventricles contained a very large quantity of fluid. There were three cavities, resembling old apoplectic cysts, containing fluid and some shreds of brown filamentous tissue :—1st. One, very large, occupying a considerable portion of the anterior lobe of the left hemisphere, extending from the surface of the brain to the membrane lining the ventricle ; the gray matter appeared eaten away, as if by some insects.—2d. Another cavity was situated near the surface of the posterior lobe of the left hemisphere, and the medullary matter contiguous to it presented numerous small holes, such as have been described as

the "bread-like appearance."—3d. Another cavity was found in the posterior lobe of the right hemisphere; no other disease was observed in the central parts of the brain. Weight, 2 lbs. 6 oz.

Thorax.—Emphysema of lungs. Heart: partial thinning of the valves of the left ventricle, resembling a small aneurismal pouch, near the aortic valves. Aorta dilated and bony.

Remarks.—In this case we see extensive disease of the brain, probably of considerable duration, without any very marked symptoms, until within a few weeks of death. The atrophy of the brain, and the softening and absorption of the gray matter of the convolutions, connected with the failure of the mental faculties, and the contraction of the fore-arm as a sign of ramollissement, are circumstances of interest in this case.

The absorption of the gray matter of the convolutions, and the holes in the white matter, presenting the appearances of porous bread, may be taken as an evidence of the attempt at curing or arresting the extensive ramollissement which had evidently been going on for a length of time in this man's brain. It is probable that, from the fawn-coloured deposit in the large cavities, extravasation had formerly taken place, and that the ramollissement was connected with these clots. The circumstance of no previous symptoms, or no paralytic symptoms, being noticed in this case,

may be explained from the fact, that though very extensive, they were at a distance from the central parts of the brain.

CASE V.

Cyst from Apoplexy ; Holes in the Brain ; death from Thoracic Inflammation.

Theophilus Dutallis, æt. 60, about three years ago had an attack of apoplexy, which was attended with paralysis of the right side ; the hemiplegia was permanent. He had epistaxis to a large amount, was much reduced, and had several convulsion fits preceding his death.

Inspection, eleven hours after death.—Brain. The arachnoid was thickened, there was considerable effusion on the surface, and a large quantity between some of the convolutions. The septum lucidum was very thin, and the ventricles were distended with fluid. There were numerous holes in different parts of the white matter of the cerebrum, as if portions of the brain had been nicely scooped out ; there was one nearly half an inch in diameter over the roof of the left ventricle, and separated from it only by the lining membrane. None of these holes had any trace of the fawn-coloured deposit, nor was there any change of colour in the parts of the brain surrounding them. There were the remains of an old and large clot in the posterior part of the left corpus striatum and thalamus ; both these parts of the brain were very

much shrunk. The cavity was lined by a fawn-coloured deposit. The blood-vessels were diseased, but no congestion. Weight, 2 lbs. 10 oz.

Thorax.—Heart very large, hypertrophy of left ventricle, valves free. Recent pericarditis, pleuritis, and œdema pulmonem.

Remarks.—In this case we have traces of old and extensive injury of the brain, which appear to have been in a quiescent state, the patient being destroyed by extensive inflammation in another cavity. The remains of the old and large clot in the postërior part of the left corpus striatum and thalamus, account for the hemiplegia of the right side, and it is highly probable that the numerous other cavities without discoloration were traces of ramollissement, coincident with, or consequent upon, and extending around the extravasated clot; or the softening may have occurred at subsequent periods during the three years that intervened between the apoplectic seizure and the death of the patient. The former supposition I think is the most probable.

CASE VI.

Ramollissement of the Gray Matter cured; Fawn-coloured traces of Extravasation on the Arachnoid of Dura Mater.

Richard Bailey, æt. 53, found exposed to the air, and brought to the Infirmary by the police, April

10th, 1835. He was suffering severe diarrhœa, with symptoms of extreme depression, so as to induce the suspicion of approaching cholera. His skin sallow, with remains of a cutaneous eruption. He has suffered much from privation, and has been discarded by his friends for irregular conduct. He rallied a little, and the diarrhœa abated. His cough continued, and signs of great debility came on, and he died on the 22d.

Dissection, April 22d, 1835.—Head: The arachnoid lining the dura mater laterally, and throughout nearly the whole of the base of the skull, was generally, and more particularly in patches, discoloured by a granular deposit of minute rusty-coloured points, evidently the traces of effused blood between the dura mater and the arachnoid. The arachnoid on the right parietal region was separated from the dura mater. Several of the convolutions at the surface of the base of the posterior lobes were in various degrees absorbed, and the fawn-coloured deposit placed there; in one or two places the whole of the gray matter was removed and the white matter exposed, in others an external thin layer only, the arachnoid covering these places was entire. From 8 to 10 oz. of serum were effused between the membranes and into the ventricles. The brain was atrophied. The vessels were but little loaded, and had no appearance of disease. Weight, 2 lbs. 7 oz.

Thorax.—Fluid in the three cavities. Lungs

emphysematous, and containing tubercles with cavities ; extensive pneumonia in the first stage.

Abdomen.—Left kidney lobular and small ; both very hard. Intestines congested with blood.

Remarks.—In this case we observe that the gray matter of the convolutions has been removed, in various degrees, by absorption ; in some places completely down to the medullary matter, which, with the fawn-coloured deposit, affords ample evidence of red ramollissement with slight extravasation having previously existed. The man was much reduced by disease and privation, and his brain had partaken in the general atrophy.

This case is also remarkable for the extensive traces of extravasation between the arachnoid and the dura mater, shewn by the rusty or fawn-coloured deposit beneath the former membrane. Layers of extravasated blood in this form, of more recent occurrence, are occasionally met with. I yesterday examined the brain of a man whose previous history was somewhat similar to that of Bailey.

CASE VII.

Thomas Phipps, æt. 59, was admitted much exhausted from disease of the lungs : he is extremely feeble, with a sallow, dusky skin. Delirium, inco-

herence, and other signs of a low form of arachnitis soon came on, and he sank on the 6th instant.

On examining his head, twenty-two hours after death, nearly the whole of the arachnoid surface of the dura mater covering the superior part of the hemispheres, was lined by a thin film of coagulated blood, which also extended to some parts of the base of the skull; in some places it was in patches, and some of the blood had evidently been deposited several days from commencing absorption, and traces of a slight yellow tinge.

In connection with this case, the superficial red ramollissement, with slight extravasation in purpura hæmorrhagica, may be noticed. The following is a good example of this appearance of the brain.

CASE VIII.

Lawrence Connor, æt. 66, admitted May 19th, 1832, with pneumonia, which was relieved by bleeding, &c. About a month after his admission, purpura hæmorrhagica appeared on both legs, attended with bleeding from the gums, bloody motions and urine. He lingered for some time, and died emaciated.

On examining his brain, the gray matter of the convolutions of the middle and posterior lobes of the right hemisphere, was covered with a thin, fawn-

coloured deposit at the inferior and posterior part; the pia mater adhered more firmly in the discoloured parts than on the rest of the surface.

CASE IX.

Ramollissement of Gray Matter cured; Death from Hæmatemesis.

Sarah Giddons, æt. 70. But little was known of her history, except that she died suddenly after vomiting a large quantity of blood.

Inspection, Jan. 17th, 1835, forty-eight hours after death.—Head. The brain was remarkably pale; there was some fluid in the sub-arachnoid tissue. On the inferior surface of the anterior lobes of the cerebrum resting on the orbital plates of the os frontis, there was a loss of portions of the gray matter, the surrounding parts being of a rusty colour. The same change had taken place at the base of the cerebellum. The dura mater opposed to these softened parts was of the same fawn-colour, and portions of the gray softened matter adhered to it. Weight, 2 lbs. 10 oz.

Stomach.—An ulcer had spread to and exposed two arteries in the stomach, from whence the hæmorrhage came.

Remark.—In this case, though but little is known of the history of the patient, we observe, in the pa-

thological condition of the brain, traces of previous ramollissement, both in the cerebrum and cerebellum.

CASE X.

Apoplexy ; Hemiplegia ; Attacks of Angina Pectoris ; Ramollissement of Gray Matter ; Traces of Ramollissement in Central Parts ; Hypertrophy of the Heart ; Ossification of the Coronary Artery.

Thomas Wood, æt. 68, had been under treatment frequently for severe attacks of dyspnœa, sometimes coming on suddenly, and attended with great pain and sense of stricture across the chest ; copious bleeding relieved him from many of these attacks. He has latterly suffered several apoplectic seizures, the second of which was attended with hemiplegia of the left side, paralysis of the face, and indistinct articulation. Although the brain now became a principal seat of disease, he still had occasional attacks of angina pectoris. His mind became enfeebled, and he shewed indications of childishness. He recovered in some degree the paralysis of the face, and his articulation was occasionally improved, but never perfectly restored. The paralysed lower extremity was much improved both in sensation and motion. The sensation of the arm improved, but the power of moving it was permanently gone. He died exhausted from these repeated attacks.

Inspection, April 13th, 1835, twenty-two hours

after death.—Head. The brain was extremely white and bloodless. The arachnoid was opaque, and there was some fluid in the sub-arachnoid tissue, and from 4 to 6 oz. in the ventricles. The gray matter on the convolutions of both the posterior lobes of the cerebrum was softened to a considerable extent. A cavity lined by a pale membrane was found in the right thalamus. The corpus striatum of the right side was very much diminished in size from previous softening and absorption. There were several small holes in various parts of the cerebrum: the white matter was generally harder and firmer than usual. Weight, 2 lbs. 12 oz.

Thorax.—Pyriform dilatation and hypertrophy of the left ventricle of the heart. Ossification of the coronary artery.

Remarks.—In the brain of this patient, who had several apoplectic attacks, and some of them leaving paralysis, which, though very much lessened in several of the parts affected, became ultimately permanent in the left arm, we find no trace of extravasation of blood ever having taken place. The most accurate observers in this branch of pathology must agree, that where blood is extravasated into the tissue of the brain, however far advanced the clot has been in progress of absorption, there is always a trace of a rusty or fawn-coloured matter left behind; and that this takes place where the cavity has become so far

contracted that its sides nearly coalesce, and approach to a cicatrix.

This man's death was not occasioned by an apoplectic seizure; he died from general exhaustion, produced by the repeated severe attacks of his two formidable maladies: his brain was found almost bloodless. The recent extensive ramollissement of the gray matter of the convolutions is probably connected with the failure of his mental faculties; this failure may have arisen in part from the general absorption of the brain, and the small holes (traces of previous softening) found in various parts of the brain. The cavity noticed in the right thalamus is most probably the remains of a previously softened state of this part, and accounts for the permanent palsy of the left arm; whilst the wasted state of the right corpus striatum, resulting from ramollissement in it, being checked and relieved, will account for the improving paralysis of the left lower extremity.

This case, with many others which I have observed, verifies the opinions of M. Foville, relative to the correspondence of disease in certain parts of the brain with certain paralytic and other symptoms during life.

CASE XI.

In the case of a man, æt. 60, who died of carditis, and in whom pyriform hypertrophy of the left ven-

tricle of the heart was discovered, the brain on examination had a stringy texture, and the cut surface of the white matter presented numerous holes like porous bread : there was one the size of a large pea to the left of the median line of the corpus callosum, but not communicating with the ventricle. These may be considered as traces of ramollissement of the white matter having previously existed.

CASE XII.

*Copious Effusion with thickened Membranes ;
Traces of Ramollissement cured ; Pneumonia ;
Hypertrophy of left Ventricle.*

Francis Knight, æt. 75, admitted with signs of extensive pneumonia in a very advanced stage, for which no efficient remedies appear to have been used. She soon sank under the disease.

Inspection, thirteen hours after death, May 21.
Head.—The membranes of the brain, particularly the arachnoid, were very thick and opaque, and much fluid was found beneath the pia mater, and in the sub-arachnoid tissue. There was also a deposit of thick white matter in various parts, similar to the glandulæ Pacchioni. The blood-vessels on the membranes were very tortuous. The ventricles were very large, and contained from six to eight ounces of fluid. On cutting the white matter to arrive at the lateral ventricles, or making the centrum ovale, as it has been

termed, it appeared quite granular, apparently from difference of density of the substance. There was a small hole lined by a membrane, in the white matter of the left corpus striatum; in the right corpus striatum there were several holes of various sizes in the gray matter, with lining membranes: there was no trace of fawn-coloured deposit in any of these holes. The blood-vessels were bony and cartilaginous to a considerable extent. Weight, 3 lbs.

Thorax.—Right bronchus very much enlarged. Traces of vivid inflammation in the bronchi. Pneumonia and hepatization in various degrees and stages. The lungs were remarkably black, but no melanotic patches. Heart: hypertrophy of the left ventricle, and dilatation. Other cavities dilated. Aorta ossified.

Remarks.—In this case we have numerous holes lined by a colourless membrane, and containing a colourless fluid in both the corpora striata, which are traces of previous ramollissement. There is also another circumstance worthy of notice,—the granular state, or the difference of density of the white matter on making the horizontal section of the hemispheres. This, I think, has been accounted for on the supposition that the more soft parts have been absorbed in some degree. It is generally allowed that the walls of a cavity, which had contained a clot of blood, may coalesce and adhere. Therefore it is not improbable, that the granular state of the white matter

may be accounted for by the coalescing and adhesion of some of the numerous small holes which I have described as traces of ramollissement, or of other softened points in the brain ; and thus afford further evidence of a more advanced stage, or of the perfect natural cure.

On the preceding facts and observations I make the following inferences.

1. In some of the cases the account of symptoms is necessarily very limited, but this circumstance I do not consider of much importance, as I am desirous of placing the subject on its true basis,—the anatomy of the brain : in other cases, however, we have a sufficiently copious detail of symptoms which indicated the nature of the disease, and the progressive improvement in some of the paralytic symptoms corresponded with the traces of the cure or arrest of ramollissement observed in the brain. The cases, No. II., Mrs. A. S., and No. X., Thomas Wood, are examples in illustration.

2. The traces of the cure of ramollissement of the gray matter are, absorption of one or more layers of this substance on the convolutions, and adhesion of the pia mater to the part ; holes in the gray matter of the corpora striata and other central parts, together with atrophy and flattening. When transudation from the blood-vessels, or extravasation, has

taken place, constituting red ramollissement in the gray matter, a permanent fawn colour of the atrophied convolutions, and of the small holes in the other parts, is observed. The slightest form of this softening of the gray matter is noticed in the case of purpura hæmorrhagica ; in others we have one or more layers removed, or the entire gray matter, leaving the white matter of the hemisphere visible. We sometimes see merely small holes in the corpora striata ; at others, cavities of various sizes and forms, with a marked wasting of these bodies.

3. The traces of the cure of ramollissement in the white matter are, the numerous clean or scooped out holes containing a limpid fluid, some of which are observed to be lined by a fine transparent membrane ; others appear as if worm-eaten. These holes are of various sizes and forms, from minute points to the magnitude of a bean : the porous cheese or new bread appearance ; the hardened state of the white matter generally in these brains, and particularly in the parts contiguous to the holes ; the granular state of the white matter indicating cicatrices ; the hardened state of the corpus callosum, fornix, &c., found in the brains of children and young persons, with fluid in the ventricles, probably the consequence of previous inflammatory ramollissement at an earlier period of life. When there is observed the fawn-coloured deposit in these holes of the white matter, they are traces of red ramollissement of the white matter, or

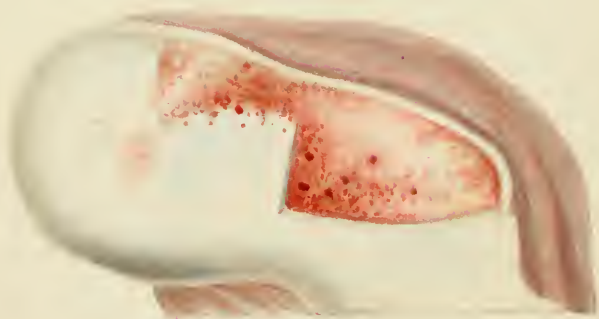
probably, in some instances, of what has been sometimes termed capillary apoplexy.

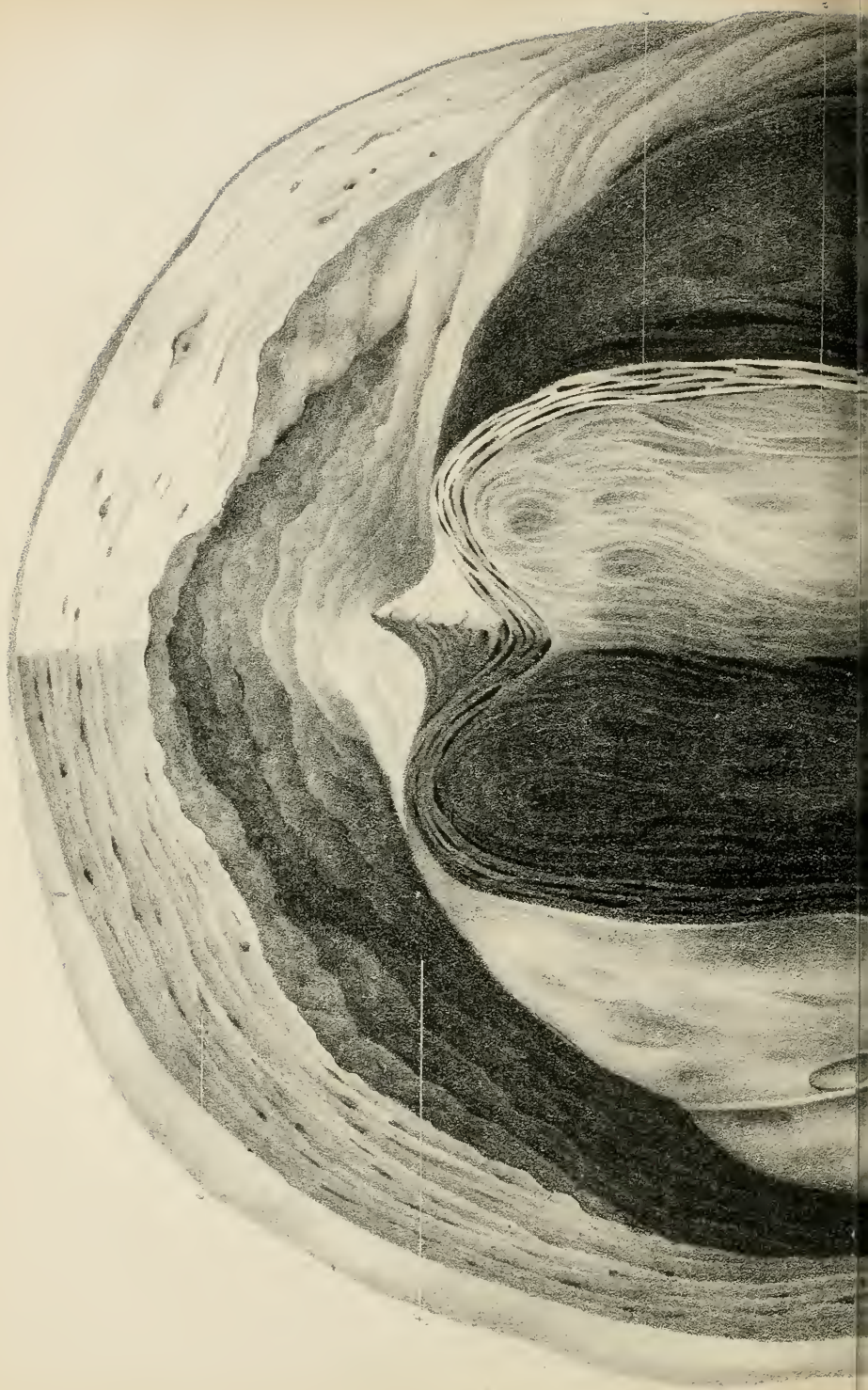
4. I have perhaps to assume in this argument that ramollissement is *by some means or other stopped in its progress*; and, if this be granted, the preceding detail of the morbid appearances will readily fill up the several steps of the process of cure: the absorption of the softened parts; the adhesion of the pia mater on the surface; the secretion of fluid into the holes; the granular state of the white matter, probably from cicatrization; the hardening of the white matter, probably from effusion of lymph; and the fawn-coloured traces of previous transudation and extravasation. And I think this assumption ought to be granted, from the improvement in the symptoms of some of the patients, corresponding with the state of the brain after death; and because it is consistent with all analogy in the powers by which nature arrests or cures disorganization in other parts of the body.

5. There are some points connected with the subject, as the spherical spots of coagulated blood, the extravasated layer on the arachnoid, the fawn-coloured trace of extravasation between the arachnoid and the dura mater, and the connection of the traces of previous ramollissement with apoplectic clots: these are subjects well worthy of attention, but I have sufficiently adverted to them

in the remarks on the respective cases in which they occurred.

6. The preceding facts and observations are, I believe, sufficient to attest the cure of ramollissement of the brain, and to set the question at rest on the solid basis of pathological anatomy.







EXPLANATION OF THE PLATES.

PLATE I.

Fig. 1. Represents the appearance of the astragalus in the case described at page 51.

Fig. 2. Represents the appearance of the ulcerated cartilage on the condyles of the femur, in the case described at page 55.

Fig. 3. Represents the appearances in the case described at page 64.

PLATE II.

REPRESENTS THE UTERUS WITH A FIBROUS TUMOUR IMBEDDED IN ITS WALLS, AS DESCRIBED IN DR. ROBERT LEE'S PAPER, Page 122.

- a. Shews the appearance of the tumour when divided.
- b. The capsule of the tumour formed by the middle and internal coats of the uterus.
- c. The edge of the opening in the capsule, through which a portion of the tumour had passed.
- d. The margin of the circular aperture in the capsule

on the right side, through which a portion of the tumour had likewise protruded.

e. The cavity of the uterus.

f. The walls of the fundus uteri.

PLATE III.

REPRESENTS THE APPEARANCES OF ENLARGED
GLANDULÆ NABOTHI. See page 128.



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